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August, 1945

EDISON ELECTRIC INSTITUTE BULLETIN

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PUBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

May, 1944 and 1945

SOURCE AND DISPOSAL OF ENERGY—MONTH OF MAY

	1945	1944	%
GENERATION* (Net)			
By Fuel Burning Plants	11,793,747,000	11,614,383,000	+ 1.5
By Water Power Plants	7,578,148,000	7,258,891,000	+ 4.4
Total Generation	**19,371,895,000**	**18,873,274,000**	**+ 2.6**
Add—Net Imports Over International Boundaries	167,950,000	153,308,000	+ 9.6
Less—Company Use	119,900,000	139,138,000	−13.8
Less—Energy Used by Producer	172,210,000	246,671,000	−30.2
Net Energy for Distribution	**19,247,735,000**	**18,640,773,000**	**+ 3.3**
Losses and Unaccounted for	2,606,611,000	2,387,350,000	+ 9.2
Sales to Ultimate Customers	**16,641,124,000**	**16,253,423,000**	**+ 2.4**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of May 31st			
Residential or Domestic	27,737,488	27,071,891	+ 2.5
Rural (Distinct Rural Rates)	1,173,382	1,127,791	.....
Commercial or Industrial:			
Small Light and Power	4,298,107	4,201,176	+ 2.3
Large Light and Power	152,331	149,005	
Other Customers	118,246	118,388	.....
Total Ultimate Customers	**33,479,554**	**32,668,251**	**+ 2.5**
KILOWATTHOUR SALES—During Month of May			
Residential or Domestic	2,672,192,000	2,472,212,000	+ 8.1
Rural (Distinct Rural Rates)	283,146,000	269,326,000	+ 5.1
Commercial or Industrial:			
Small Light and Power	2,476,975,000	2,349,211,000	+ 5.4
Large Light and Power	9,726,379,000	9,658,523,000	+ 0.7
Street and Highway Lighting	156,966,000	154,897,000	+ 1.3
Other Public Authorities	670,333,000	722,640,000	− 7.2
Railways and Railroads:			
Street and Interurban Railways	383,671,000	365,111,000	+ 5.1
Electrified Steam Railroads	220,436,000	218,849,000	+ 0.7
Interdepartmental	51,026,000	42,654,000	+19.6
Total to Ultimate Customers	**16,641,124,000**	**16,253,423,000**	**+ 2.4**
Revenue from Ultimate Customers	**$275,132,200**	**$267,132,000**	**+ 3.0**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended May 31st			
Kilowatthours per Customer	1,180	1,112	+ 6.1
Average Annual Bill	$41.06	$39.48	+ 4.0
Revenue per Kilowatthour	3.48¢	3.55¢	− 2.0

(*) By courtesy of the Federal Power Commission.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 13 AUGUST 1945 No. 8

Sales Training—Number One Industry Need

EEI Moves to Create Job Opportunities

By C. E. Greenwood
Commercial Director, EEI

THE Production Engineer has been receiving the plaudits of members of the Armed Forces and of civilians for unprecedented results in the development of new techniques in manufacturing processes and for results in mass output during the war period. The engineers of our own utility industry are among those deserving of applause for their notable achievements.

Enter in peacetime an opportunity for the Sales Engineer to score similar fame because Distribution will be a key to future industrial success, and it is recognized that the problems involved in market expansion, competitive sales approach, and market saturation are numerous and complex. Sales Executives must solve these problems. In every important industry, men have been getting their heads together to plan strategic action in the distribution field. Thousands of column inches of advertising space are being used to soften up the market for a sales attack at the opportune time.

Doctors will disagree on the order of importance in planning procedure, and the relative merits of the many considerations that will claim the attention of the planners. But it is probable that the greatest number of votes will be cast for the training of sales people as the number one need. However, from the viewpoint of a representative of an electric service company it is in order to venture a prelude.

Why not plan as a backdrop, the orientation of management on the opportunities and responsibilities for intensive business development in the company—not just "normal growth." The enviable reputation that utility managements have earned for their war effort is the result of their foresight in sensing the demands of war-loads that were on the horizon and preparing for them. May they now be equally impressed with sales potentials just around the corner. Also with the considered viewpoint of leaders in all other industries that an army of trained salesmen-power must be depended upon to make healthy contribution to the economic welfare of the nation, and that because the utility is to serve in a sharply competitive market, the customer representative of the electric company should be second to none in the selling field.

No more encouraging step could be recorded to signify the majority thinking of utility managements than the voting of a substantial fund by the Board of Directors of Edison Electric Institute to develop a Sales Training Program for the use of the electrical industry. It is understood that it will serve to train men and women, not only of the electric utility industry, but sales people of the manufacturer, wholesaler, or retailer, who service utility customers and desire to participate. In fact, it is gratifying to learn officially from Charles G. Pyle, Managing Director of the National Electric Wholesalers Association that their membership is ready to cooperate in the development and distribution of the Basic Sales Training Course, and such other sections of the EEI program which may be of particular interest to wholesaler field men.

It should be emphasized here that this Course is concerned with customer buying motives in each classification of Service. The Sales Training Committee believes that specific Product training is the function and responsibility of the individual manufacturer, and is assured by the principal manufacturers of equipment that they will continue this type of training in the future. The Basic Sales Training Course of EEI relieves manufacturers of the necessity of training in the fundamentals of selling, and will result in substantial saving to them of money, time, and effort.

The Sales Training Committee, under the Chairmanship of M. R. Rodger, of Middle West Service Company, Chicago, after making an exhaustive examination of the various professional agencies selected the Vocafilm Corporation to develop a modern educational program. That Company has for the past several months been engaged in surveying the requirements of the industry, in drafting comprehensive outlines of the courses, and these have been analyzed, corrected, and approved by the Committee, so that the course is now in the production stage.

Added to the staff of Vocafilm Corporation for this special assignment are men chosen for their special fitness in this field. Robert E. Young, formerly head of the Department of Public Speaking at Williams College, is to supervise the writing of the Salesmen's Manual and Leader's Guide. For the past 17 years, Mr. Young has acted as Consultant on Salesmanship and Human Relations for industrial concerns throughout the country. The film material is being prepared by Allan T. Snowdy, author and director of numerous service and industrial training films, such as Westinghouse's technical color "Middletown Family" at the New York World's Fair, films for Public Service Co. of N. J., and other utilities, and the Western Electric Company. Acting as Consultants are: Leslie Lewis, who has had wide experience in sales training work,

first as director of the Corporation and Sales Division of La Salle Extension University, and as Vice-President of the Connelly Corporation. He has been also a consultant on Sales Training courses for leading companies in the electric industry. He is a member of the Training Division of the Bureau of Personnel of the U. S. Navy Department. Clinton Brown has for many years been intimately associated with sales training for the Edison General Electric Appliance Company and has been employed as Consultant for training organizations, such as La Salle Extension University and the Forest Training Institute.

The program of Edison Institute consists of a complete set of eighteen sound-slide films and records, one for each meeting, together with the same number of silent trailer films, manuals covering the sales stories, and a Leader's Guide for each meeting.

The material provided for each of the eighteen lessons or meetings will include a sound-slide film that dramatizes sales training, pictures right and wrong approaches, and compares successful and unsuccessful methods visually. Using the same technique applied so successfully by Vocafilm in the production of training films for the Army and Navy, these dramatic presentations make learning quick and easy for the new men and serve equally well as a refresher course for the more experienced sales people. A valuable part of this training technique is a silent trailer-film which goes along with each sound-slide film. These "trailers" point out the situations developed by the sound-slide story and are intended for discussion and analysis.

For each meeting there is a Leader's Manual for procedure in instruction. It gives a complete outline of the meeting, and is in such detail that an inexperienced man will be able to conduct successful and interesting meetings. At each meeting the trainee will receive a Salesman's Manual which puts into print everything that he has seen and heard at the meeting, together with additional information for home study. The complete set becomes his permanent reference book.

The circular of information shows the following brief outline of contents:

First Meeting

The opportunities for the Salesman in the Electrical Industry—the dignity and importance of his profession—its part in the national economy—what is expected of him—how he can apply himself to the serious study of the service or product he has to sell.

Second Meeting

Why customers buy—The basic impulses behind every sale—customers buy to achieve definite advantages which fall into known classifications—telling the story of the service or product terms of the customer's greatest interest.

Third Meeting

Organizing the Sales Presentation—gaining the prospect's interest—securing the important decisions that must be made—helping the prospect decide that something should be done, that the service or product offered is the best answer, and that he is getting his money's worth.

Fourth Meeting

Helping the prospect make his first decision—obtaining recognition of the need—determining what the prospect values most—aiming the sales story at the solution of his problems.

Fifth Meeting

Helping the prospect make his next decision—showing that the service or product fills his need—demonstrating and proving advantages and benefits.

Sixth Meeting

The third important decision—establishing the quality and prestige of the service or product—recognition of the firm and salesman as the ones from whom the prospect should buy.

Seventh Meeting

The final important decision—that the advantages to be gained outweigh the price—that the maximum benefits will be obtained by making the expenditure at this time.

Eighth Meeting

Showing how to use the established pattern—how to organize sales efforts to the end that the work would be constructive—and what is more important, more profitable to the prospect and to the salesman.

The ten Meetings on Applied Selling are outlined in the box below.

At a meeting of the Commercial Division General Committee, held in New York on June 4 and 5, the complete training program was presented. There was an enthusiastic acceptance of the general plan which was convincing of its success.

A circular of information will be mailed upon request to the Commercial Department, Edison Electric Institute, 420 Lexington Ave., New York 17, N. Y.

The 10 Meetings on Applied Residential, Commercial, Industrial, and Rural Selling

Material for:

4 Residential Meetings

Sound Slide Films — Silent Discussion Films — Leader's Meeting Manuals — Salesmen's Manuals
Applying the basic sales principles to residential needs:

a. Electric Range
b. Electric Water Heater
c. Electric Refrigerator
d. The Home Laundry

4 Commercial Meetings

Sound Slide Films — Silent Discussion Films — Leader's Meeting Manuals — Salesmen's Manuals
Applying the basic sales principles to commercial needs:

a. Store lighting
b. School and office lighting
c. Commercial cooking
d. Miscellaneous motor applications, such as ventilating, air conditioning, etc.

Industrial Meetings

No films are provided for the sales training course for industrial representatives. However, there will be a Leader's Manual which correlates the eight basic courses with the existing Power Sales Manual. The latter Manual, developed by the Power Sales Committee of the Edison Electric Institute, is recognized by power engineers as a fundamental text book.

2 Rural Meetings

Sound Slide Films — Silent Discussion Films — Leader's Meeting Manuals — Salesmen's Manuals
Applying the basic principles to rural needs:

a. Methods of showing the farmer how to become a more successful business man
b. Illustrations of uses of electricity for various farm applications

All of this applied selling material makes practical applications of the basic principles covered in the first eight meetings. It places particular emphasis upon the specific problems which salesmen will meet in the field.

Some Observations on the Record of the Electric Utilities in the War

By Alex D. Bailey

Vice President, Commonwealth Edison Company

From a talk before the Rock River Valley Section, ASME, at Beloit, Wis.

IN 1941 the output of electricity for all purposes, including that generated by the utilities as well as by industry, amounted to 205 billion kwhr, and for 1943 was estimated to reach 255 billion kwhr, or even possibly more. The corresponding figure for 1943 was 275 billion kwhr (utilities 221 billion; industry 54 billion) and for 1944, 287 billion kwhr (utilities 231 billion; industry 56 billion). It was also estimated that the change to wartime throughout the year would reduce the peak load on the utilities by at least 800,000 kw. It has since been estimated that this reduction amounted to as much as 1,700,000 kw.

The new capacity installed since 1941 has amounted to 6,200,000 kw and that on order for installation this year and next amounts to 2,700,000 kw, which will increase the country's capacity to about 53,000,000 kw. There have been no restrictions in the use of electricity for any purpose due to lack of generating or transmission capacity.

To make the record complete it should contain some reference to a number of direct contributions of a more personal nature from the utilities, their officers, and employees. It might be well to give a few instances of direct assistance the utilities have been able to render to the Army, Navy, and other war agencies.

The Utilities Wartime Aid Program, organized in March, 1942, is an informal organization of about 600 utility companies, both privately and publicly owned, and governmental supply authorities held together by the common bond of service to the country's war effort. These utilities serving the thousands of military establishments in the continental United States have made available to the War and Navy Departments their experience, research, materials, equipment and skilled manpower. This action avoided the necessity of maintaining duplicate emergency crews and stocks of vital equipment at each of the many military establishments as the supplying utilities stood ready to provide the necessary service and equipment.

From its inception the Program was primarily concerned with getting problems incident to construction worked out and operating procedures established. Since early in the spring of 1944 this service was extended so that a utility engineer worked with an engineer in the military establishment to make complete inspections of the electrical facilities. A start was made in the accumulation of load data for the purpose of eliminating excess transformer capacity which it is assumed will be carried on by the military personnel. If all the service rendered could be evaluated it would surely run into hundreds of thousands of dollars.

In addition to the careful attention that operating people pay to the matter of using fuel efficiently the utilities were asked to cooperate in a nation-wide campaign to conserve fuel which was launched December 1, 1943, by a decree from the Solid Fuels Administration. This decree provided that utilities having more than certain stipulated amounts of reserve coal supply on hand would only be allowed to purchase upwards of 60 per cent of their normal coal requirements—the remaining 40 per cent or less would have to be taken from storage. This order although amended occasionally and discontinued between the months of March and January was in effect annually until April 1, 1945, when the restrictions on the use of coal exclusively for heat were made more drastic. The effect of this order was to reduce the utilities' coal storage supply from upwards of 110 days shortly before the war to about 58 days during the peak load period of last winter. This, of course, released the difference to other users. Many of these restrictions were being followed in advance of orders and all of them were accepted with good grace even though considerable increase in costs were involved due to the large volume of coal moved from and to storage. In many instances severe manpower problems were involved to secure the necessary operators and maintenance men to operate and maintain all the coal reclaiming equipment. The overburdened transportation systems of the country were therefore saved the added task of moving millions of tons of coal at a time when their operational problems were exceptionally complicated by long spells of inclement weather.

Another aspect of the fuel situation was the fact that many utilities formerly purchasing the better grades of eastern coal at higher costs per ton were forced to substitute coals of lower Btu value containing more moisture, ash, and sulphur. This seeming economic advantage was completely nullified by the greater labor costs and increased operating problems resulting from attempting to operate steam generating equipment on fuel for which it was not designed.

In September, 1943, the electric power industry was asked by the Office of War Utilities in cooperation with other war agencies to bring to the attention of their customers the increased need for conservation of manpower, transportation, fuel, equipment, and such critical materials as copper, steel, and tungsten. Utilities conducted advertising campaigns in their service areas and their sales forces contacted the larger commercial and industrial establishments to convince them to voluntarily reduce all merchandise display and advertising lighting; lighting of marquees, building entrances and general interior illumination. In all instances utilities led the way in following out these conservation instructions.

The increasing scarcity of fuel prompted the War Production Board to instruct all suppliers of electricity to inform their customers that on February 1, 1945, all of the above prohibitions, including "white-way" street lighting, became mandatory with certain minor exemptions and that the responsibility for compliance was on the consumer. This "Brownout" order necessitated extensive advertising on the part of the utilities and the mailing of many reprints of the order with explanatory remarks to commercial and industrial customers. In addition many utilities took it upon

themselves to notify customers whose rate was a function of their demand that the Company was working on the matter of an adjustment in their rates.

Sales representatives made millions of contacts with customers explaining provisions of the order and investigating alleged violations and verifying customers' requests for exemptions from various provisions of the order. The Compliance Division of the WPB sent telegrams to alleged violators and has served notice on some utilities of customers who have refused to comply. I understand that in practically all cases, the utilities have been successful in getting letters of compliance without having to cut off service.

The "Brownout" was prompted by the necessity to save fuel and transportation. Similarly the "Dimout" was required for security reasons, chiefly along our coastal areas. In neither case were the resulting reductions in load required because of any shortage in generating capacity. As you know, the "Brownout" order was cancelled on V-E Day, May 8, 1945. In this short period of three months it has been estimated that about 400,000 tons of coal were saved. The national annual saving had been estimated at about two million tons of coal.

The utilities have helped the morale of the war effort by contributing to the health and comfort of civilians in the so-called "swap campaigns." These were started in the fall of 1943 in response to a plea from the Office of War Utilities for the utilities to do something to place idle electric appliances in the hands of many whose appliances were beyond repair. Advertising campaigns were conducted instructing the owner of an idle appliance to take it to a neighborhood dealer who would appraise it, pay for it in war saving stamps, restore it to a salable condition and then resell it. No nation-wide figures are available as to what was accomplished by this movement but a lot of good must have resulted as in a number of instances utilities ending their campaigns late in 1944 have been forced to reinstate them in 1945 due to the insistent public demand.

Many utilities loaned employees to work in the Office of production Management, the War Production Board, and a multitude of other governmental agencies as well as the Army and Navy for special assignments. Some of these men have moved to high places in the war agencies. Mr. J. A. Krug, Chairman of the War Production Board, is a former utility man, most recently from the Tennessee Valley Authority. The contribution of these men served a two-fold purpose. In the first place, they were utility men, thoroughly familiar with equipment needed for the production, transmission and distribution of electric energy, the time required to produce and install it, and the various operating problems. Utility companies knowing the background of these men trusted their judgment in the matter of what spare parts and equipment were available in the light of wartime economy. Secondly, they were usually men of executive calibre, well versed in the technique of getting things done, and in the early days of the growth of governmental controls they achieved miracles in sensing the desired objective and reaching it before the development of complete procedures.

A contribution which has assisted in holding high the morale of employees now in the armed services has been the pronouncement of policy which some utilities will follow in regard to returning veterans which goes far beyond the letter of the law. No doubt there will be a country-wide similarity of treatment but as a sample I should like to mention the policy of a number of companies which provides in general that the returning veterans will be placed on the payroll at the rate of pay, including increases, that they would have received had they stayed at the jobs they left and will be given full credit for time spent in military service when calculating their service annuity.

The nature of the electricity-supply business is such that one does not expect the cost of electricity to fluctuate as irregularly as the costs of other items. In the past five years, the unit costs of labor and materials have increased considerably for the utilities and yet they have been able to keep down their unit costs to the public. In fact, the studies of the National Industrial Conference Board show that for an average small residential consumer in this country using 35 kilowatt-hours per month, the cost of his electricity has decreased about 6 per cent. This decrease applies to the average of the same seventy cities which were used in compiling the cost of living index referred to previously.

For all users of electricity, the cost per kilowatt-hour has decreased 12 per cent since World War II started. This decrease is partly due to some decreases in rates and partly due to the increased usage of electricity by the industrial customers with the accompanying reduction of the overall average rate to them.

The cost of electricity to the industrial customers, of course, is a direct part of the total cost of producing war goods. Utilities in spite of increased cost of operations and taxes have been able to deliver increasing amounts of power to our industrial machine at lower unit cost to help keep down the cost of the war and have not increased the rates for electricity to residential and small commercial customers; in fact, there have been a number of cases where it has been feasible to reduce the cost per kilowatthour.

The general tendency to use more electricity in this country is well known and explains the continuing annual increase in the peak loads of all the electric utilities contributing to the public supply from about 22,000,000 kw in 1935 to 41,500,000 kw this past year. The war production beginning in 1939 sharply increased the rate of growth in demands for electric power.

Utilities need substantially more generating, transmission and distribution capacity than the maximum load to be carried at all times. Part of this is necessary to provide for over-hauling and the occasional forced outage, and part because water power is still a function of variable rainfall. Then too, the maximum demands may not occur at the same time or in the same area where hydro-capacity is available. The excess of capacity above the maximum demand should be kept to a reasonable value, but construction of new capacity must be started some time in advance because it takes two years to build generating stations. The utilities anticipated much of the increase in demands for war or national defense production and ordered additional generating capacity. However, the War Production Board and its predecessors found it necessary to limit the use of materials and suspended or cancelled the installation of much power plant capacity. These changes materially cut the available margin of generating capacity above the maximum demand.

In 1935 this margin or reserve generating capacity was 14,000,000 kw compared with 8,500,000 kw in 1944. Expressed as a percentage of the maximum demands the comparable figures are 64 per cent and 21 per cent. The relatively high percentage in 1935 was due to the remaining effects of the depression.

Various releases of information from the War Production Board have been studied to determine how much greater the margin of safety would have been without restrictions on generating capacity. These releases indicate that in 1943 and 1944, 2,300,000 kw of capacity was not in service because of cancellations or suspensions.

The tight situation of the past few years in reserve capacity has tried the ingenuity of utility operators. It has been necessary to carefully plan overhaul schedules so that as many maintenance jobs as possible could be done when major equipment was out of service. Defective equipment was kept in service until the week-end, or in some cases, temporary repairs were made and units returned to service at partial capacity until they could be released for satisfactory repairs. The inability to obtain repair parts quickly has increased the number of temporary repairs necessary. In spite of all these problems, Mr. J. A. Krug, Chairman of the War Production Board, has publicly praised the performance of the utilities in meeting all demands on schedule.

The kilowatt-hours of electric energy consumed by all the customers of the electric utilities in this country have increased by 87 per cent since 1939. The kilowatt-hours consumed per kilowatt of generating capacity have increased from 3,200 in 1939 to 4,600 in 1944, or 42 per cent, largely due to the increased tendency of industrial users to operate their plants around the clock, instead of having their plants operate just in the daytime. During these war years, the additions to plant investment have been kept to a minimum in order to save on critical materials and manpower, consequently the kilowatt-hours sold per dollar of plant investment in 1944 have increased 62 per cent over that of 1939.

The consumption of electricity by residential and rural customers increased about 50 per cent between 1939 and 1944. Although the total usage of electricity by rural customers is a small portion of the national usage, the kilowatt-hours they used increased about 80 per cent. Part of this increase since 1939 was due to the fact that one million new rural customers were connected to the lines of the electric utilities. Undoubtedly these increases in rural service help materially in taking care of producing our food supply under restricted conditions.

The consumption by the customers classed as large light and power increased about 65 billion kilowatt-hours per year in the past several years or 125 per cent between 1939 and 1944, which largely accounts for the increased demand on the electric utility during the war years. These customers are essentially factories, mills, and mines producing industrial goods now going mainly to the war effort.

The use of electric power by industries materially increases with increased production. Few people realize how closely the use of power in industry coincides with industrial production; in other words, how dependent industrial production is on electric power. To prove this point, the Federal Reserve Board's index of physical production adjusted to show 1939 equal to 100 per cent was compared with the use of electricity by large light and power customers similarly adjusted and they almost coincided throughout the war period.

If we had not had the long hour usage each day for the industrial customers and we had not strained ourselves on keeping the plant additions down to a minimum, then to take care of the growth in electric load during the past few years, a tremendous additional amount of equipment would need to have been manufactured and installed. The result was a big saving to the country in materials and in manpower.

Special studies were made by individual utilities and through cooperation among engineers on a national basis, to substantially increase the maximum allowable loading of overhead and underground transmission lines, generators, transformers, and other equipment. These increases in loading avoided the necessity for installing additional equipment and using critical materials. It was fully recognized that many of these increases in loading were accomplished at the expense of rapid deterioration and shortened life for the equipment. The utilities have been willing to accept this shortening of the life of their equipment provided the actual failure does not occur during the war period.

The practice of all utilities has been to provide a maximum in the way of uninterrupted service to industry and homes alike. Material reductions have been made in the practice of providing spare capacity for the purpose of insuring continuous service. New war plants, in many cases, were supplied through a single transmission or distribution line, instead of through two or more in parallel, and equipment failure under these circumstances will result in an interruption in service to the customer of the utility. Fortunately, the quality of modern electrical equipment is such that the disturbance to these industrial customers through the reduction or elimination of reserve capacity has not been serious.

Metropolitan utilities have abandoned the long-established practice of putting lines underground for purposes of civic beauty except where absolutely essential for purposes of safety. The substitution of overhead lines for underground lines has resulted in very substantial savings in copper and the elimination of the lead sheath of underground cables. For example, one utility was required to serve a large war plant with an estimated maximum demand of 30,000 kva. The normal practice would be to supply this plant through three 33,000-volt underground cables, two of which are necessary to carry the normal load and one as a reserve. These cables would each have had 350,000 c.m. conductors. The elimination of reserve cut down the number of lines from three to two, and the use of overhead instead of underground construction permitted the use of copper with less than half the cross-section. Therefore, nearly three-quarters of the weight of copper or aproximately 200,000 pounds were saved by this temporary construction for supply to this one war plant. The appearance of the present construction is, of course, not satisfactory, but it will probably be removed at the end of the war when production ceases in this plant.

Wood was substituted for steel during the first three years of the war in many instances on transmission lines and on the terminal equipment for high-voltage lines. This saved substantial tonnages of steel when this material was so short. At the present time, wood has become an even more critical material than steel and the practice has again changed so that concrete or, in a few instances, steel has been substituted for wood construction.

All these substitutions in material and in design naturally result in a standard of construction which is not recommended for continuous use. In some cases the temporary construction will need to be replaced during peacetime. The utilities have been quite willing to cooperate in these practices in the interest of helping the war effort.

The electric utilities have had a severe and urgent manpower problem to face just as have other businesses connected with war work. The utilities have made a special effort to avoid making requests for deferments from military service whenever possible. In fact many employees joined the armed services before war was declared in this country as reserve officers or through the various National Guards. The total number of employees of electric utilities contributing to the public supply (construction workers excluded) decreased 22 per cent for all causes from a total of about 300,000 in 1941 to about 265,000 at the end of 1944. Of course, the number of people engaged directly by the utilities and by others in connection with construction work for utilities, also decreased in the past few years. If this decrease is taken into account, then the total decrease in the number of people taking care of electric utilities' work becomes more nearly 30 per cent.

While the utilities were losing employees, the demands for electricity were increasing. Electricity produced per employee increased gradually from about 280,000 kwhr in 1935 to about 400,000 kwhr in 1940. Since 1940 it has more than doubled reaching about 850,000 kwhr per employee in 1944. Increasing load factors and longer hour work-weeks were factors in this remarkable increase.

Not all of this increase in production per man can be retained in the post-war period. The utilities expect to resume their contribution to increasing the standard of living and providing employment in this country. This would mean an increase over the present number of employees due to such factors as reducing the work week from 48 to 40 hours for some of the forces, hiring of salesmen and others to promote increased usage of electricity, and hiring of office and field forces that would be required incidental to adding to or rehabilitating the physical plant. The construction work mentioned in the last item also results, of course, in providing employment in the factories for the manufacture of equipment needed by the electric utilities.

The primary responsibility of electric utilities is to meet all demands for power when needed both in time and amount of service required. For the war record, on this score, I quote the compliment from Rear Admiral W. R. Monroe, of the U. S. Navy: "When we called for power we got power and not—thank God!—alibis."

FPC Brings Its Estimate of Bonneville Fixed Capital Into Line with Army's Allocation

On July 13, 1945, the Federal Power Commission issued a revised allocation of fixed capital costs at Bonneville Dam, following closely the original policy of the Army Engineers in dividing joint costs equally between power and navigation and practically duplicating the figures submitted by the Bonneville Power Administration to a committee of Congress last April (See "Finances of the Bonneville Project-1944" in the Bulletin of the Edison Electric Institute, June, 1945, p. 163). The minority report of Commissioner Smith advocated charging 85 per cent of joint power-navigation costs to power. A further step in the direction of sound accounting principles has been the charging of 2½ per cent interest during construction, which the Power Commission states: "is the approximate weighted average cost of money to the United States obtained by the issuance of bonds during the period 1933 to 1943 inclusive, within which the project was substantially completed."

The comparison of the original Army and Federal Power Commission's allocation with the present figure is shown below.

INITIAL DEVELOPMENT (2 POWER UNITS—86,400 KW—INSTALLED)

	U. S. Army Engineers Corps		Federal Power Commission	
	Navigation	Power	Navigation	Power
Dam and Reservoir	$15,033,500	$15,033,500		
Fishways	3,538,600	3,538,600		
Buildings and Grounds	450,900	450,900		
Joint Use	$19,023,000	$19,023,000	$35,988,800	$ 2,501,900
Navigation Alone	5,631,300	.....	5,517,600	.....
Power Alone	.....	11,089,400	.....	9,180,500
Total	$24,654,300	$30,112,400	$41,506,400	$11,682,400
Per cent of Total	45%	55%	78%	22%

Source: *Engineers:* Report of E. M. Markham, Chief of Engineers, to House Rivers & Harbors Committee, March 17, 1937.
Power Commission: Release #380, February 9, 1938.

In 1937, the Army Engineers estimated the cost of facilities used jointly by Navigation and Power at $38,046,000. This sum was divided by them equally between Navigation and Power. The Federal Power Commission estimated the cost of joint facilities at $38,490,700. This sum was divided by them at 80 per cent for Navigation and 20 per cent for Power. It will be observed that the allocation for power was barely one-third of the cost of the fishways alone, leaving the entire dam and reservoir to be borne by "navigation."

In 1945, the Federal Power Commission, and Commissioner N. L. Smith, apportioned the complete development as follows:

PRESENT DEVELOPMENT (10 POWER UNITS—518,400 KW—INSTALLED)

	Federal Power Commission		Commissioner Smith	
	Navigation	Power	Navigation	Power
Joint Use	$20,121,927	$20,121,800	$ 6,036,600	$34,207,127
Navigation Alone	5,784,055	.....	5,784,055	.....
Power Alone	.....	37,681,648	.....	37,681,648
Total	$25,905,982	$57,803,448	$11,820,655	$71,888,775
Per cent of Total	31%	69%	14%	86%

Source: F.P.C. Release #2740, July 13, 1945.

Opportunities for Young Men in the Electric and Gas Industry

By Justin R. Whiting

President, The Commonwealth & Southern Corporation

Reprinted from the *Army and Navy Journal*. One of a series of articles prepared for the *Army and Navy Journal*, by leading officials in business and industry, telling of opportunities open for released Service personnel.

THE electric and gas utility companies are an integral part of the American system of equal opportunity in business and industry. The growth of the public utility industry to its present size, ranking third in the nation in the amount of dollars invested, was accomplished only through the faith and credit of our system of free enterprise. The industry is typical of that enterprise. Large investment is required to provide its tools of production and employment. Roughly about $50,000 is invested for each employee engaged. This money has been provided by insurance companies, savings banks, colleges, fraternal societies, and many ordinary people as individual investors out of their savings.

The United States has played a major part in the development of the electric power age, with the result that our electric industry has a record of performance during thes war years second to none. The people in it knew from the beginning that they could not fail, because industry in this country was geared to electric power. They had brought that about; and without the acclaim that naturally accompanied the great expansion in the building of ships, guns, tanks and planes, the electric industry quietly went about its business of seeing to it that the necessary power was available to manufacture munitions of war. The gas business likewise stood ready to meet the unprecedented demands of war. They were prepared.

The ability of the public utility industry to meet this challenge was not developed overnight. The industry has always had to plan and build in advance, to be ready to meet the requirements that have been put upon it. The demands of World War I furnished a great impetus for the construction of larger electric generating plants and networks of transmission lines, and to insure that the product of those plants would find a market, a big selling job was done. Industry and commercial business was increasingly electrified; wiring in homes was undertaken on an unprecedented scale, both for better lighting and with the promotion of widespread use of electrical appliances; and rural electrification went forward. For a quarter of a century the nation has been intensively electrified, and the sale of gas for home consumption and factory use has been increased, until today these products are interwoven in our economic and social fabric. This was done by privately-owned industry which last year had federal, state and local taxes estimated at over $900,000,000.

Yet we have learned through the urge of war these past three and one-half years, that we are only on the threshold of the uses to which electricity will be put with the coming of peace. The advantages and economies to result from the fuller use of natural gas have yet to be fully realized. There is a big selling job ahead.

What does this mean in the way of prospects for the young men of today?

Perhaps you have been prone to think of the business as offering opportunity to the engineer. Naturally, it has drawn men of engineering training to build and maintain its properties, and as with any production enterprise, it will continue to need engineers; but that is only part of the story.

As the business has grown and customers taken on by the tens of thousands, and regulation has increased in scope, accountancy and general business administration have come to play a large role.

Gross revenues of privately-owned and operated electric and gas companies in 1944 were over $4,000,000,000. In an industry of that size there is opportunity for a wide range of business experience. Responsibility for the earnings and investments of the companies, and for paying out large sums for wages, materials and equipment, interest and dividends, requires men of financial and general business training. Taxes and rates offer fields of employment. Many kinds of insurance are carried in substantial amounts. The companies buy millions of dollars of machinery, equipment and supplies annually. In all departments of the business, companies supplying engineering and services to the management and personnel of the operating utilities have developed specialists who have worked for the industry for many years and whose abilities and experience are available to those responsible for the operations.

In the field of labor relations, a mutual understanding of the problems of management and employees has characterized the industry, based on the knowledge that there is a common interest in carrying on the business and that the companies have a responsibility in the development of the territories they serve. These war years bear witness to that.

Through the years ahead, the utility industry is going to need young men from the ranks of the veterans of this war, as today it has its quota of veterans of World War I. A great many of its men have and are giving a splendid account of themselves in all branches of the services in World War II. The industry takes just pride in their accomplishments and will welcome the day when they will be back on the job. As the manpower situation changes and men are released from the services, retirement plans of the utility companies will make available jobs for younger men. The companies today have not a few men in their organizations who would normally be retired, but who have stayed on to help during the manpower shortage, and others are reaching retirement age each year.

Here is a business that has known no horizons, an industry that has taught its customers to expect the best in service and has consistently lowered the price of its product.

The companies require the best talent there is in the many fields involved, and their business is so ingrained in the future of this country, it must of necessity keep pace with the nation's growth in the coming days of peace.

There Had Better Be More Than Just "Talk About Selling"

By Don Mitchell
Vice-President, Sylvania Electric Products Inc.

A talk before the Interstate Power Club, New York, N. Y.

BEFORE we take up the matter of selling power in the postwar world, I'd like to draw a picture of the kind of a world I think it will be. I'm no seer; I'm merely basing this drawing on what the market researchers have been able to find out, plus a little of that business called "Putting two and two together."

At first, much of the business talking and thinking will be in terms of products. "So-and-so has a terrific new product. . . . It'll revolutionize everything." There will be talk of rapid reconversion: "From bombs to bread-boxes in three days." Then as the boys drift back from the wars and the girls drift back from Lockheed's and Kaiser's, there will be much stressing of job-creation. Finally—and not too long after V-Day, I hope—there will be much talk about Selling, because we'll suddenly realize that product design and production facilities can't by themselves get the industrial machine rolling.

There had better be more than just "Talk about selling," because from where I sit that's the weakest part of the whole postwar picture. In the past few years we've just about forgotten what the word means.

There's a lot of optimism about pent-up demands and buyers eager to grab whatever you can make. That may be true of cars, and nylons and a few real war casualties, but by and large, the home-front has been pretty well taken care of. People may not be as eager to buy as some of us want to think. You may have heard what we found out about two typical products—light bulbs and radios.

In our own market research we found that the public is articulate about its radio but it is definitely inarticulate about lighting. When we asked the public about their radio, what things they like about it, 94.3 per cent could think of one or more things they liked. When we asked them to name one or two things they would like improved, 92.8 per cent made suggestions, only 7.2 per cent were inarticulate.

But when we asked similar questions about lighting 58.6 per cent couldn't think of anything they liked about their lighting. A few said "It's wonderful" or "We don't have to clean the wicks any more"—but we didn't get any specific answers. For example, 9.5 per cent said they liked their three-way lamps; 6.7 per cent said they liked their portable fixtures; 5.6 per cent said they liked their indirect lighting; 4.5 per cent said they liked attractive fixtures and 3.6 per cent said they liked absence of glare.

When we asked them to name some of the things they don't like, 57.3 per cent couldn't think of anything. The 42.7 per cent who could think of bad things about their lighting talked about a lot of things. 10.3 per cent said they didn't have enough outlets, 8.7 per cent said they didn't like overhead fixtures; and 6.5 per cent said they didn't like the style. A sufficient number of outlets certainly has little to do with lighting but it has a great deal to do with adequate wiring.

But we did find that America is not at all short of electric light bulbs—in fact most of us have spares in the cupboard. And we found that while we have a potential market for 20 million radio sets the first year after the armistice, they have got to be improved over pre-war models and the price must be right—and anyway, our terrific production capacity could probably make those 20 million sets in less than a year.

There's the picture as the fact-finders see it. We have a goal of 140 billions in a national income and 55 million jobs. That's $1000 for every man, woman and child in America. We can do it. God help our system of free enterprise—or what's left of it—if we *don't* do it. But to do it we've got to sell, sell, sell! We've got to sell as we've never sold before. I'll predict one thing: when we do that selling job and get the machine rolling again, the salesman will at last get the recognition he deserves in this economic system.

Well, you say, "that's fine for business in general, but how about us? Our problem is different." But is it? I don't think any field will be off in a class by itself. It will be "Sell or Die" with you just as it will be with us in the lighting and electronic manufacturing field. You'll have real competition, maybe from the government, maybe from diesels, maybe from other power sources which will be after your market.

If you wish, let's forget about competition for a minute—maybe you won't have any real competition in the sense that we, as manufacturers, will. But we all have an obligation to enlarge our markets, for that is the only way this system of free enterprise can justify itself and bring about a higher standard of living.

I saw a survey the other day that made me wonder if utilities were really planning to enlarge their industrial power market. It was very disquieting. It indicated that the average utility in the postwar period plans to have one industrial power salesman for each 1100 of its customers or potential customers. That means if each salesman makes four calls a day, he can reach each of his customers once a year. How any sales manager expects salesmen to do a creative market development job on such a basis, I don't know. That's the kind of call-schedule we used to give the retail Pepsi-Cola salesmen, but I think you will agree that selling Pepsi-Cola to a corner store and selling power to any industry are two different things. It just can't be done. The kind of selling needed to increase industrial loads might involve spending a solid week studying each customer's problems and making recommendations based on cold hard facts.

It's not a bit too early right now to start making definite plans for selling a bigger power load. It takes a year to get any selling operation organized and rolling, and with all deference to you

fellows, nearly all of us in this sales management business are starting from scratch.

Let's break down this selling problem into its components so we can see where to start. I always feel that the place to start is with the facts. Your business may be different, but I don't think many of us have got the real facts about our market. By facts I don't merely mean how many industrial meters there are in your territory—I mean the complete market picture—who makes what, what their present and potential consumption is, how their own markets look, type of equipment, light meter readings in their plants, what types of heating processes they use, what kind of ovens and other heat treating equipment, what uses they have in new electronic devices—the complete picture on every customer in your territory.

Granting that such information would help your sales program, you may ask how do you get data like this. Usually you have to buy it or go get it yourselves, very seldom do trade groups or chambers of commerce have the whole picture. You may say that your top management won't buy data like this because they don't see the need of it. Well, that's where the first selling job comes in. If we can't sell top management on the necessity of giving us the tools to work with, we are not very good salesmen. We must prove to management that we can't work without such tools, and we may have to cite a few case histories to show the tremendous untilled markets waiting for us once we have data. We have let a lot of water run over the dam in the past couple of years when we could have been getting at least a sample of the type of selling data we need and do that necessary selling job on management.

To give you just a couple of examples of how wrong we can be in our selling data, take the radio parts business. They had always accepted the fact that only about 10 per cent of radio renewal tube sales were made over the counter. Actually the right sales figure brought out by market research is nearer 40 per cent. All this time they had been forgetting that radio repair men also sell tubes over the counter to customers.

Here's another: soft drink people had figured for years that there were 65,000 outlets for soft drinks in greater New York. After three months of tough market research we found there were 110,000. I could cite case after case of shrewd corporations and entire industries being way off the beam as to what their actual sales potential is. In the tough selling days ahead no one can be that far wrong in their selling data and still exist.

With top management back of you, the next move is to plan your sales force. I have always thought of this as a five step job: there is nothing new about these five steps but it's amazing how seldom they are observed by sales management. First, you select the right salesmen; second, you train them properly; third, you must direct them intelligently; fourth, you must compensate them adequately; and fifth, you must fully back them up.

I don't know how the average utility picks its power salesmen, but if it's anything like the average industry it's on pretty much of a hit or miss basis. Some fellows call up their friends, others interview top scholars from several colleges, others try to steal them from competitors.

A great deal has been written about selecting salesmen. Saul Poliak of American Management Association for one has written some articles on the subject. The point I want to make is that the slipshod methods of selecting men in the past won't be good enough if you are really planning a top-notch sales organization.

Now, Training the men you pick. Let's be sure we take advantage of some of the training technics developed during the War. If we can make skilled workers out of farm hands in the matter of weeks when we used to think it took years, I suggest that we can greatly speed up and improve the training of salesmen. Let's *not* follow the old methods which have been so unsuccessful. I mean the typical habit of putting college graduates into various departments of the factory for a year and a half or two years and then have them answer customer correspondence for another year before they can get out and sell. That's enough to kill all the enthusiasm a natural salesman may have to start with. Your good man will leave and all you will have are ordinary plugger-type order takers.

Directing salesmen can stand a little scientific overhauling too. By sales direction I not only mean the meetings, the pep talks, contests, awards and those other external gimmicks in the Sales Manager's book of tricks, but I mean also the analysis of the market, the fixing of territories, setting of quotas, the analysis of individual prospects and the study of call reports. The day has gone when sloppy direction and guesswork in setting territories and quotas can get by.

Now about compensation. The fellow who prides himself on having a low-cost sales force is just fooling himself. I have always maintained that one $5,000 a year salesman will outsell two $2500 a year salesmen nine times out of ten. There is also a mental hurdle that some Sales Managers have to face whenever a salesman starts earning more than his boss does. I see nothing wrong with that; I am against ceilings of any kind on what salesmen can earn—provided he's working his territory properly. But any attempt to hold them back from earning to their full capacity inevitably means they are either going to jump somewhere else and that's too bad—or they are going to seek relief through other means.

There's probably no one best method of paying salesmen—it's all in the matter of administration. I am convinced, however, that some form of incentive compensation—an urge to do a better job and thus earn more money is absolutely essential.

By backing up the salesman I simply mean giving him the proper tools to work with and seeing that once his order is turned in it's properly filled. Proper tools mean good forceful advertising and publicity, sales promotional material, good engineering data, good case histories to lend weight to his sales points. Don't be afraid to put a little showmanship in these selling tools. After all, businessmen and engineers are human. They don't live by cold figures alone.

So much for getting the house in order; now where are we going to look for load? Well, let's look at my business, lighting. Maybe you think light has been pretty well sold during the War. I question that. I'll go along with the authorities who say 75 per cent of industry still needs relighting. I wish you could have seen the avalanche of orders we received for fluorescent fixtures the first day after the War Production Board lifted L-78 restrictions. Don't forget that for every DPC plant that's been lighted in the last couple of years there are 50 to 100 oldtime plants where the light levels are way below adequate.

As a matter of fact, what is an adequate light level? Is it 15, 25, 35, 50, 75 or 100 foot candles? Maybe it's 150. Maybe foot candles have nothing to do with it, maybe it's all a question of light

on the working plane. The point I am making is that maybe we ought to overhaul our prewar thinking on what is adequate lighting and start selling and forget all about foot candles. Let's sell vision, lower cost production, better labor relations. Let's not give them twice the light for the same load, let's give them five or six times the delivered light for twice the load.

That's what I mean by showmanship. You can raise the light level in a plant from 25 to 40 foot candles and when you get through the owners probably will have trouble seeing any difference, but if you give them four or five times the light they will see the difference and being human beings they will probably think the difference is worth the cost. Some of you are probably saying, "that's quite a job selling the idea of four, five or six times the light—when we can't even sell them twice the light. Sure it requires selling! Nothing worth while was ever put over without plenty of selling pressure. If America just bought things, people like us would probably be out of a job.

I am convinced that the oldtime era of lighting sales is dead and gone—and a good thing too. The new era ahead will demand that we know all the arguments, pull out all the stops, use the functional, engineering, scientific and merchandising approach to this question of lighting. The engineers are getting set to give us new and vastly improved lighting equipment and we've got to keep abreast of them.

Maybe we think some of the present day fluorescent light installations are pretty good. I predict that the next few years will prove that fluorescent lighting is in its swaddling clothes, much of it is poorly installed, many fixtures are already obsolescent. If we go at this thing correctly we can relight the whole USA in the next 10 years.

Another point I want to make is that selling starts at home. I was in a Utility office last week, and they asked me if I would like to see a fluorescent installation they had made in one of their conference rooms. I said, "sure." They took me in, pulled a key out of their pocket and opened the door to let me in. I took one look and told them, "Boy, if I were you I'd never let anybody in." Take it from me, it was a "dog." Taking a customer in there would have been one of the quickest ways to unsell them on doing a fluorescent lighting job. I don't say it's typical of all utilities, but there's plenty of room for improvement. It seems elementary to me that a utility should be the best lighted place in town with every architectural trick and piece of showmanship you can cram into it to make people light conscious.

Take Commercial Lighting. Some of the largest stores in the country—stores we all think of being shrewd merchandisers—admit they don't know beans about lighting. We can walk into them and see that that's true. Light levels are far too low and much of the light they do have is used to illuminate their pipes and sprinkler heads on the ceiling instead of the merchandise. They don't do nearly enough spot-lighting. Even when they switch over to fluorescent they are still not well lighted because somebody didn't do a good selling job.

Then there is this question of Maintenance. We all know how important maintenance is by looking at the automobile industry. The only reason Detroit has been able to sell so many cars is that the public knows that the dealer who sold them that car is going to take care of it for them. It is pretty hard to walk into an industrial plant today without finding a serious load loss in outages—simply because we have tried to duck this maintenance question.

I know many utilities would like to keep on ducking it and maybe they're right. I don't think, however, they can duck the responsibility of seeing that electrical equipment in their area is properly maintained. Perhaps the utilities could sponsor and help maintenance organizations, and if they don't do a good job, the utility can always set up or threaten to set up its own maintenance department.

There is money in Maintenance. Let me tell you how our lighting maintenance plan started. A few months ago I happened to drop in on an old friend of mine who bottles Pepsi Cola. He had a good fluorescent lighting installation, but there were outages all over the place. I asked him if he would be willing to pay to keep all lamps burning by subscribing to regular fluorescent maintenance service. He said, "Sure, but who sells such a service" With his permission I agreed to ask a local contractor to call and discuss the problem. He signed him up immediately.

The point is that thousands of commercial lighting installations need and will gladly pay for fluorescent lighting maintenance—if they can find someone to render the service. We believe the electrical contractor is best fitted to render the service and have been sponsoring a simple, direct plan for profitable operation on a contract basis. We also believe that utilities should encourage fluorescent maintenance as a load builder, and where contractors fail to grasp the opportunities, utilities should initiate the service themselves.

How about new uses for electronic heating? Today the application of induction heating is in its infancy yet equipment now in use have a power demand that is greater than all the radio broadcast stations in the country. The tremendous growth of the plastics industry also represents a potential market for dielectric heating. These two potential markets for power have hardly been touched yet they are present wherever ferrous and non-ferrous metals are processed with heat; wherever plastics are preformed; wherever there are drying and gluing processes; wherever wallpaper, chemicals, hosiery, textiles, tire cord fabrics, and rubber products are manufactured. We have just begun to use electronic heating, and electronic heating means new high load demand from the largest industrial customer right down to the garageman who will perhaps use electronic heat to vulcanize and retread automobile tires.

Industrial electronic applications have been divided into eight principal groups. Number one, and the largest load builder is heating, which I have just barely outlined. The others—all steady load builders—include control; regulation; power conversion; counting, weighing, inspecting; molecular vibration applications; measurement and analysis; and safety. Each one of these major applications has been surveyed and defined by Electronics Magazine. Their survey indicates that only 12.3 per cent of all industries now use electronics for heating; 52 per cent for control applications; 8.7 per cent for regulation; 23.4 per cent for power conversion; 17.2 per cent for counting, sorting, weighing and inspection; a negligible per cent for molecular vibration; 46.4 per cent for measurement and analysis; and 19 per cent for safety. This is the record today. It doesn't even mention the things which are now known in the research laboratories of Sylvania and other companies. Many things now secret but proved in the baptism of fire during the war may greatly expand the market for power for electronic devices. Electronics in indus-

(*Continued on page* 244)

Electrical Products for the Peace Time Market

This discussion is a chapter from Section V—Market Problems in the Residential Field—of the Postwar Planning Report of the Commercial Planning Committee of the Institute.

Surveys of Customers' Buying Intentions

TO maintain and accelerate the upward trend in electric consumption in the home, electric companies will wish to consider what appliances contribute most toward this end. During 1944, a survey was made of the experiences of twenty-six large electric companies representing ten million meters. These companies are located in all sections of the country; from the Atlantic to the Pacific, and from the Canadian border to the deep South.

There was considerable agreement as to the four major residential markets which will be most actively promoted postwar. Cooking comes first; lighting second; water heating third; and refrigeration fourth. Refrigeration becomes a very strong fourth if the home freezer is added. Beyond these comes indoor climate equipment, laundry equipment, and small appliances. The electric blanket and farm equipment receive honorable mention. Aside from residential lighting, refrigerators, ranges, water heaters and radios, in that order, are expected to be the major contributors to the average total annual residential use of service.

The table below compares, for the 26 reporting companies, kilowatthour contribution by various residential markets to average residential use in 1943, and their estimates of these contributions in 1950.

	Average Residential	*Kwhr Contributions*					
Year	*Kwhr Use*	*Lighting*	*Refrigerators**	*Ranges*	*Water Heaters*	*Radio*	*All Other Uses*
1943	1,162.8	414.3	263.2	157.7	110.1	88.5	210.7
1950	1,573.7	474.4	278.8	255.3	246.6	95.8	310.8
Increase	410.9	60.1	15.6	97.6	136.5	7.3	100.1

A few companies estimated average kilowatthour use without giving a complete break-down as to the expected source of this growth. The average kilowatthour contribution for each type of load was therefore based only on the number of companies supplying data in each case. For this reason, the sum of the average kilowatthour contributions to total use is greater than the average increase estimated by all companies.

Water heaters are expected to be the biggest single contributor to increased residential use (33.2 per cent), ranges are second (23.7 per cent), lighting third (14.6 per cent), refrigerators, not including home freezers, fourth (3.8 per cent), and radio fifth (1.8 per cent).

* Not including home freezers.

A number of excellent surveys on consumers' buying intentions after the war are available. The surveys cover varying income groups and were made during different periods between 1941 and 1944. As may be expected, there is little uniformity in the forecasts of the volume of electrical appliances which the public may be expected to purchase in the postwar period, but there is a definite trend to indicate a widespread and substantial market.

An increase in the buying intent of the public is shown in surveys made in 1944 and 1945 compared with those made in 1941 and 1942, which apparently reflects the progressive obsolescence of appliances owned and, on the average, a more favorable financial position.

Thought should be given to the experience that there is a difference between desire for new appliances and decision to buy. There is also a possibility that the first postwar models will be of the 1942 variety and that prices may be higher. Aggressive sales action will be required to convert these market potentials into actual sales.

A survey by a mid-western utility company in a large metropolitan area may be of interest in judging the customers' *intentions* to buy new appliances after the war. The information was obtained from 1942 to 1944 in connection with a survey on the condition of electrical appliances and in most cases the tabulated information is the result of voluntary comments and not answers to leading questions. Out of 8223 non-range residential electric customers, 9.53 per cent signified their intention of purchasing new hand irons; 9.01 per cent a vacuum cleaner; 7.58 per cent a new washer; 4.35 per cent a new toaster; 4.26 per cent a new refrigerator; 3.58 per cent a new roaster; 3.04 per cent a new radio; and 3 per cent a new mixer.

A similar tabulation in the same city for 2370 residential electric range customers reveals 7.72 per cent intend buying a new mixer; 7.68 per cent a new washer; 3.50 per cent a new vacuum cleaner; 3.12 per cent a new refrigerator; 2.49 per cent a new range; and 2.41 per cent a new ironer.

A study among the WACS by the First Air Force to learn their postwar hopes shows the number one wish is to get married and own and furnish a home. There was a 60 per cent increase in the number of those who would use electricity for cooking compared with those previously using it; 30 per cent increase in desire for a mixer; and 450 per cent in those who want an electric dish washer.

A War Production Board survey of "Pent-up Demand" was made in 1944 among 4488 representative householders. (*Consumer Credit*—November, 1944, of Consumers Bank Institute.) Of eight leading items of civilian goods desired, six were electrical, the order being new homes, automobiles, radios, electric irons, electric ranges, vacuum cleaners, refrigerators, and washing machines. The survey indicates a wide replacement demand. Many of the customers stated, however, that they would wait, either for improved models, better prices, or until the designated equipment was again found in the stores.

Comments on Promotion of Certain Products

What are some of the new products which we may expect to promote? Foremost is the ELECTRIC REFRIGERATOR with the addition of a major compartment for frozen food storage. There may be dual-purpose machines with a quick freeze attachment. For those wishing to quick freeze food products in a separate box there will be the HOME FREEZER. Market estimates for this latter appliance are limited only by the enthusiasm of the estimator. For example, the War Production Board Task Committee estimates as high as 500,000 sales for the first postwar year. A survey by a large manufacturer of electric refrigerators indicated a market for home freezers between 350,000 and 400,000 units per year. Another manufacturer of home

freeze cabinets foresees a demand of 750,000 the first two years following the war.

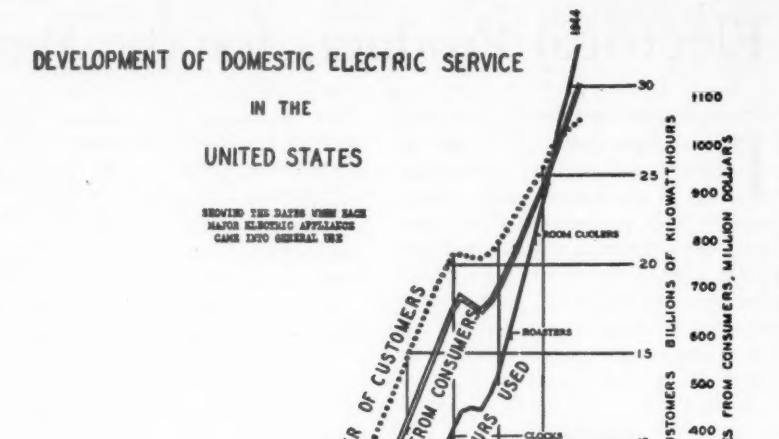
There can be no doubt of the impression made by the value of stored food supply on many thousands of home owners in the past three years. Approximately three million families in the United States now rent frozen food lockers and after the war, the distribution plans of the large food-processing houses will favorably influence the market for home freezers. Even in the war period a fore-runner of what many consider to be the butcher shop of tomorrow was opened in Chicago with frozen food containers and dispensers arranged attractively and ready for service. One line of stores, already announced, will be arranged like automats for self-service. This will encourage use of refrigerators with frozen food storage compartments. A refrigerator with storage space in an upper-cabinet section for 80 pounds of frozen food has already been publicized.

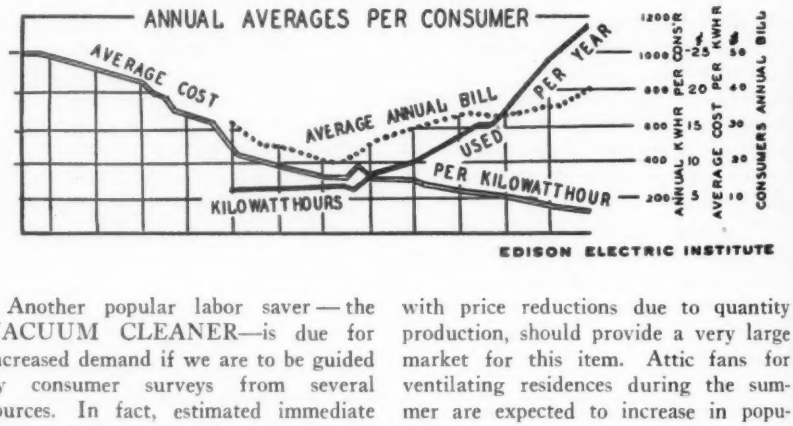
Suffice to point out in connection with the future residential refrigeration load that sights on kilowatthour consumption from this class of business should be pointed upward, even though there may be a partially offsetting factor from the replacement of old refrigerators.

The sequence type WASHING MACHINE is expected to rebuild the interest of housewives in laundering clothes at home. One manufacturer led in the pre-war pioneering of the automatic type but the market will have the promotional power of a dozen other manufacturers in post-war years. The total production of the industry in 1941 was under two million. The demand for all types in the first postwar year is estimated to be in excess of 3,000,000.

The washing machine, being an anchor for the complete home laundry, will assist in popularizing IRONERS which only in recent years have gained a substantial measure of public favor, and ELECTRIC CLOTHES DRIERS, which several manufacturers have announced, will be produced in improved form.

HAND IRONS will continue to be made both automatic and non-automatic. A newcomer in the electric iron field will present an iron without cord but with thermostatic control from a hot plate. Also, the electric steam iron has been improved in operation and is due to be popularized by a few manufacturers who will add them to their present lines postwar.





Another popular labor saver — the VACUUM CLEANER—is due for increased demand if we are to be guided by consumer surveys from several sources. In fact, estimated immediate demand is more than the 1941 production of 2,100,000. The "tank type" of several years ago had returned with marked improvements in pre-war days and should gain favor for above-the-floor cleaning. Postwar models will be built to answer a demand for cleaning efficiency combined with lightness. One prominent manufacturer offers a bagless cleaner. Re-styling is the program of most manufacturers.

ROOM COOLERS, AIR CONDITIONING, and other INDOOR CLIMATE equipment promises a substantial residential market in the postwar period. Just prior to the time that production ceased, due to requirements of the war, the Room Cooler had attained substantial popular acceptance in many sections of the country. Reduction in weight, due to better design and the availability of new materials, together with price reductions due to quantity production, should provide a very large market for this item. Attic fans for ventilating residences during the summer are expected to increase in popularity.

It is accepted that there will be constant improvement in the standard RADIO sets. FM will be built into most of the better sets. TELEVISION will be an important new addition in the home appliance field. Recent developments promise clearer and larger pictures with sufficient brightness to be viewed in a moderately well lighted room. It appears, however, that there will not be a runaway market in the television field despite the glowing picture that has been painted by some enthusiasts. The first cost of a high-quality set, the expense incident to first class entertainment and the need for developing specially trained performers may tend to retard somewhat the broad use of television.

As previously pointed out, increased emphasis will be placed on the promo-

tion of ELECTRIC RANGES. The same may be said of ELECTRIC WATER HEATERS which have made many new friends during the war and have demonstrated that when properly installed, they are one of the most trouble-free home appliances.

Appliance Check List

The following check list of electric appliances may prove useful in the preparation of postwar promotion plans:

KITCHEN
- Refrigerator
- Range
- Dishwasher
- Roaster
- Clock
- Radio
- Ventilating Fan
- Garbage Grinder
- Food Mixer

DINING ROOM
- Room Cooler
- Clock

LIVING ROOM
- Radio-Phonograph — Combination or Television
- Germicidal Lamp
- Room Cooler
- Clock

BREAKFAST ROOM
- Coffee Maker
- Toaster
- Waffle Maker

LAUNDRY
- Washing Machine
- Clothes Drier
- Ironer
- Flat Irons

UTILITY ROOM
- Oil Burner or Stoker
- Forced Air Blower
- Electric Water Heater
- Home Freezer
- Electric Air Cleaner
- Air Conditioning Refrigerating Machine

BATHROOM
- Radiant Heater
- Germicidal Lamp
- Health Lamp

BEDROOM
- Electric Blanket
- Germicidal Lamp
- Room Cooler
- Clock
- Infra-red Dressing Room Heater

GENERAL SERVICE
- Lighting
- Attic Fan for Ventilation
- Home Workshop
- Appliances for general use, such as:
  - Mixer, coffee mill, grill, vacuum cleaner, electric sewing machine, heating pad, vibrator, electric razor, health lamp, buzz fans, hair drier, and curling iron.

It is not unlikely that there will appear a substantial number of new names in the electrical manufacturing field; for instance, one of the largest farm implement manufacturers plans a complete line of chests for freezing and storage. A large manufacturer of food products will produce irons, coffee makers and pressure cookers and an airplane manufacturer will produce several items in the electrical appliance field. A well-known manufacturer of mattresses and bedding will aggressively promote the ELECTRIC BLANKET. These newcomers, together with established companies, may be relied upon to actively promote the market for all types of electrical appliances which will materially aid the electric company in its goal for increased residential consumption.

Northwest Association Meeting

AMID renewed enthusiasm for the possibilities of extension of service to farms, and eventual resumption of electrical business in all fields after the Japanese war, the 38th Annual Meeting of the Northwest Electric Light & Power Association, at Portland, Ore., July 18, elected Pat Johnson, Puget Sound Power & Light Co., Seattle, president. At the same time the Association went on record commending the administration of the retiring president, J. A. Hale, Utah Power & Light Co., Salt Lake City, who had directed the Association's affairs during the past two critical war years. T. E. Roach, Northwestern Electric Co., Portland, was elected vice-president.

The meeting heartily endorsed the project started by Mr. Hale of issuing a rural electrification booklet, telling of the accomplishments of the business-managed electric utility companies in the area, in cooperation with state colleges and others, and pointing to the future development in this field, by which these companies expect to serve an additional 25,000 rural customers during the next few years. This booklet, when issued, will tell the story of the many benefits electricity has brought to agriculture in this region, and will be distributed in quantity to public officials, farm customers and prospects, and organizations interested in agriculture and electrification.

The meeting also endorsed in principle the idea of establishing an Industrial Inquiry Service by the electric companies of the Pacific Northwest, with the details to be worked out by the incoming executive committee.

Other officers elected at the meeting were: vice-president for Idaho, C. J. Strike, Idaho Power Co., Boise; vice-president for Montana, S. P. Hogan, The Montana Power Co., Butte; vice-president for Oregon, George T. Bragg, Pacific Power & Light Co., Portland; vice-president for Utah, W. A. Huckins, Utah Power & Light Co., Salt Lake City; vice-president for Washington, W. L. Thrailkill, The Washington Water Power Co., Spokane; vice-president for British Columbia, W. C. Mainwaring, B. C. Electric Railway Co., Ltd., Vancouver, B. C.

Provision was made for the first time at this meeting for representation on the Association's executive committee by electrical conractors and appliance dealers. R. D. Horning, Seattle Electrical Contractors Association, Seattle, was elected to represent the former, and Carl Edstrom, E.N.E. Appliance Co., Portland, to represent the latter. Manufacturer and jobber representatives on the committee were elected in the persons of J. C. Platt, Edison G.E. Appliance Co., Seattle, and W. M. Jewell, Westinghouse Electric Supply Co., Seattle. Utility company representatives were John C. Boyle, The California Oregon Power Co., Medford, and George E. Sullivan, Portland General Electric Co., Portland.

President Johnson completed the roll of Association officers by appointing J. E. Anderson, Puget Sound Power & Light Co., Seattle, as treasurer, and Berkeley Snow, Portland, executive secretary. He also appointed the following section chairmen: Accounting & Business Practice, C. R. Groth, Pacific Power & Light Co., Portland; Business Development, J. M. McKay, Portland General Electric Co., Portland; Engineering and Operation, R. J. Davidson, Pacific Power & Light Co., Portland; Personnel, R. H. Sessions, Idaho Power Co., Boise. The Personnel section is newly created this year from the Personnel Conference, which has been functioning for the past two years. "Business Development" was adopted as the new name of the former Utilization section, thus re-establishing its pre-war name and suggesting its activities for the future.

Mr. Johnson also announced that the Association's over-all planning committee, known as the Electric Development Committee, will be headed by Daryl B. Leonard, Pacific Power & Light Co., Yakima, Wash., a position held by Johnson the past two years. He stated it as his intention to call the new executive committee together within the next month and a half, so that an early start can be had on the many important affairs the Association proposes to undertake this year.

Wiring Deficiencies in Existing Structures and Some Suggestions for Modernizing

This discussion is a chapter from Section V—Market Problems in the Residential Field—of the Postwar Planning Report of the Commercial Planning Committee of the Institute, released to EEI member companies this month.

THE automobile industry in the early twenties was confronted with the dual job of promoting the building of new roads and improving the traffic capacity of existing roads. Similarly, the electric industry today is confronted with the necessity of raising the electrical capacity of wiring in existing residential structures and in seeing to it that new structures are adequately wired.

There are many collateral advantages in selling the public on adequate electric service facilities, including the entrance facilities. Customers have become complacent in their use of electric service and take the necessary facilities for granted. It is inconceivable that a family would start out to rent a home and fail to count the number of bedrooms and after having moved in find that they are one or two bedrooms short. Few customers, however, realize that electric wiring is of equal importance and even if they do, are frequently not sufficiently versed on the subject to enable them to make a proper investigation. If then, appliances do not operate properly or lighting is unsatisfactory, the customer either criticizes the poor quality of his electric service or the value of the appliances themselves and, in either case, is an impediment to the load-building process.

The need for additional wire capacity applies to rental properties such as apartment buildings and two-family dwellings, as well as to owner-occupied homes. In the past, efforts in this direction have done much good but have very generally been pointed towards additional outlets and switches. Additional outlets without increasing the service entrance may, however, bring about the use of more equipment than the service entrance facilities should handle, causing voltage drops with resulting inefficient operation of lights and appliances.

Table A shows the age of American dwelling units as of April, 1940. As previously stated, many of these homes have been modernized with respect to facilities other than electric. When adequately wired, these form a vast reservoir for the sale of additional electrical appliances.

War emergency housing has been deficient with respect to electric capacity because of shortage of wiring supplies and general restrictions in the use of building material. In war housing, where it is of a permanent nature, there is an extensive rewiring job to be done. While some of it may be disposed of in various manners, there will remain a sizable rewiring job to be done. In addition, it is estimated that there are a hundred thousand or more houses in the "unrated" class which have been built in the United States since 1940, all deficient in wiring for modern electrical living.

Several plans have been used and discussed in attacking the problem. The choice depends on the local conditions.

A plan which has accomplished good results involves the installation of a three wire entrance switch and fuse block of substantial capacity in connection with the sale of a major appliance. This is based on the experience that there is less sales resistance to the installation of new entrance facilities when the desire for a new electrical appliance has been created. At that time, some spare capacity beyond that actually needed can be sold. Subsequent purchases of electrical equipment may then only require the installation of an additional circuit or the installation of an outlet.

In cases, electric utilities have paid in whole or in part for the installation of the additional entrance capacity in connection with the sale of a range or other heavy duty appliances. Some thought has also been given to wiring plans of this kind in connection with the sale of automatic laundries and ironers. Even though the annual revenue from the individual appliances may not fully warrant the expenditure, the opportunity is created to sell additional load building equipment without again bringing up the question of wiring.

One of the areas where war housing has been at peak is the West Coast. A study was made by H. C. Rice of Southern California Edison Company through seventeen utility districts, private and public. In commenting on this study, Mr. Rice states:

"Service entrance equipment in most cases will be found to be overloaded and will have to be changed if the interior wiring is augmented. It will be found that a large proportion of the circuits for both plugs and lights are No. 14 wire and that plugs and lights are mixed on the same circuit. It is probable that the best way to improve this wiring will be to enlarge the service entrance equipment, and add No. 12 wire plug circuits with not more than 10 plugs per circuit. This will give the occupants of these houses good voltage at least on their portable appliances. In many cases the owners of these houses will desire to have a range and/or water heater circuit installed at the same time they are modernizing the rest of their wiring. Additional lighting outlets will be required, particularly over the sink in the kitchen, and these, in most cases, can be added to the

TABLE A—AGE OF DWELLING UNITS IN U.S.A.—APRIL, 1940

	Urban (a)	%	Rural Non-Farm(b)	%	Farm	%
Total Reporting Age	19,747,848	100	7,582,541	100	7,333,850	100
Under 5 years old	1,215,295	6.2	1,256,282	16.6	718,687	9.8
Over 5 years old	18,532,553	93.8	6,326,259	83.4	6,615,163	90.2
Over 10 " "	17,554,626	88.9	5,537,548	73.0	6,043,969	82.4
Over 15 " "	14,521,885	73.5	4,582,930	60.4	5,476,797	74.7
Over 20 " "	12,066,290	61.1	3,772,980	49.8	4,781,620	65.2
Over 30 " "	8,281,769	41.9	2,548,760	33.6	3,344,881	45.6
Over 40 " "	4,550,179	23.0	1,484,166	19.6	2,024,508	27.6
Over 50 " "	2,328,404	11.8	902,411	11.9	1,264,191	17.2
Over 60 " "	1,788,843	9.1	560,434	7.4	803,469	11.0
Over 80 " "	377,141	1.9	255,756	3.4	374,644	5.1
Average Age	29 Years		25⅔ Years		31½ Years	

Notes: (a) All places of 2,500 people or more
(b) Includes places of 2,500 and smaller.

kitchen lighting circuit. So far as possible it will be advisable not to add plugs to existing circuits because these circuits are probably overloaded."

An unknown factor is the life expectancy of many thousands of dwellings which were built during the war years, a condition common to many districts in the United States that have had a mushroom growth of these types of buildings. The following outline, based on the work done by Mr. Rice, is suggested as a guide to those desiring to make a similar study.

Wiring Deficiencies in Existing Structures

I. *Factual Analysis of Status*
- A. War Housing
  1. How many are there by territory? Total?
     a. FHA—Title VI.
     b. Permanent unrated houses.
  2. What are the wiring deficiencies?
     a. Service entrance.
     b. Load center.
     c. Circuits.
     d. Plugs.
     e. Switch legs.
     f. Ceiling light outlets.
  3. What type of wiring will Electrical Inspectors permit for wiring additions?
  4. How many of these houses are privately owned and how many are still in the hands of builders or tract operators?
  5. How can this additional wiring be financed on time payments?
- B. Prewar Built Homes.
  1. Ditto No. 2 above.
  2. Ditto No. 3 above.
  3. Ditto No. 5 above.

II. *Recommendations on Action Needed to Correct.*
- A. Secure from tract builders typical floor plans for estimating purposes.
- B. Discuss with electrical contractors the permitted wiring methods and costs of doing such wiring.
- C. Make up schedule of prices for selling purposes.
  1. Complete correction job for a flat price.
  2. Schedule of unit prices.
     a. To change service entrance $.....
     b. To change load center $.....
     c. New circuits of No. 12 wire $.... per circuit plus $.... per plug.
     d. Remove bracket light and install ceiling outlet and switch leg $.....
     e. Switch legs to control present ceiling outlet $.....
     f. Additional outlet on existing circuit $.....
- D. Set up similar schedule of prices for selling additions to wiring systems of prewar built homes.
- E. After conferences with FHA Banks and Finance Companies set up a finance plan to cover wiring additions.
  1. Down payment.
  2. Minimum monthly payment.
  3. Length of terms.
  4. Method for approving credit.
- F. How many salesmen are needed.
  1. Where to get them.
  2. Who will they work for.
  3. Schedule of compensation.

III. *Steps Required to Put Program into Effect.*
- A. This plan should be considered as a "work pile" item to be planned to take up the slack in the electrical industry before new building starts and new appliances arrive on the market.
- B. Make this an organized, coordinated industry-wide effort in which the electric company takes a leading part in organization and promotional activities.
- C. Hold meetings with electrical contractors, inspectors, suppliers, etc., to explain the campaign and develop interest to the point of action.
- D. Organize an advertising campaign to inform the buying public.
  1. Newspapers.
  2. Letter inserts and bill stickers.
  3. Direct by mail.

While the type of plan selected will depend on local conditions, wiring modernization, if aggressively promoted, will pay dividends in additional loads and will provide employment and opportunity for industry cooperation. Of course, plans for wiring improvements should be as inclusive as conditions permit, but the electric company should not overlook the importance of partially improving wiring conditions where a complete job does not seem to be possible of achievement. It is obvious that the good will and cooperation of the electrical contractor is of first importance in this work, for it is this branch of the industry which does much of the planning and layout of wiring systems and is generally the direct adviser of those planning wiring improvements in existing structures.

Estimated Wattage, and Average Consumption of Electric Household Appliances—Assuming Regular Use

APPLIANCES	AVERAGE WATTAGE	ESTIMATED K.W. HOURS CONSUMED PER ANNUM
Bottle warmer	450	10
Blanket (electric)	215	150
Clothes Dryer (electric)	2500	250
Clock (electric)	2	17
Cooker (fireless)	650	75
Cooker (egg)	600	15
Corn Popper	600	5
Curling Iron	20	5
Dish Washer & Disposal	350	45
Fan (desk)	75	20
Fan (ventilating)	40	25
Floor Polisher	200	15
Fruit Extractor	50	5
Grill	600	25
Hair Dryer	100	5
Heater (radiant)	850	70
Heating Pad	50	3
Home Freeze Cabinets	200	550 - 700
Hot Plate	1000	70
Immersion Heater	200	5
Iron	850	100
Ironing Machine	1400	130
Mixer (drink)	50	5
Oil Burner	250	350
Percolator (metal)	450	50
" (glass type)	450	70
Range	7500	1100 - 1450
Radio (electric)	100	100
Refrigerator	200	300 - 420
Room Coolers	600	800 - 1200
Roaster	1320	225
Sewing Machine	75	10
Shaver	10	2
Small Motor	100	10
Stokers	250	275
Sun lamp S1	400	25
Toaster	800	30
Vacuum Cleaner	200	20
Vibrator	50	2
Waffle Iron	800	10
Washing Machine (all types)	190	40
Water Heater	3000 - 4000	2800 - 3600
Health Motor	250	5

Compiled June, 1945 by Edison Electric Institute.

Pole Top Resuscitation Saves Another Life

Unusually Interesting Photograph Is Obtained of Resuscitation Team at Work on Pole

JACK ARRINGTON

BECAUSE of an expert knowledge of the application of the pole-top method of artificial respiration by one of his fellow-workers, Raymond Prickett, Columbus, Ga., lineman, an employee of the Georgia Power Co. is alive today.

The accident to Mr. Prickett, according to *Snap Shots*, employee publication of the Georgia Power Company, occurred on July 9, when he contacted an energized 4 kv primary conductor while working on top of a pole with a Georgia Power Company line crew and a Southern Bell Telephone company line crew in Columbus.

W. L. Sewell, foreman of the crew, engaged nearby, heard Mr. Prickett groan but was unable to reach him without the delay of precious time. He called to J. L. Arrington, troubleman, who was across the street at the line truck. Donning his belt and rubber gloves, Mr. Arrington ran across the street, climbed the pole to Mr. Prickett and broke his contact with the conductor.

Mr. Arrington began applying artificial respiration immediately. After ten minutes, Mr. Prickett began breathing lightly. Twenty minutes later his breathing had become nearly normal. However, the application of artificial respiration continued for an hour, when it became apparent that the victim could breathe normally.

Mr. Arrington was relieved in applying artificial respiration by Mr. Sewell and Albert Prickett, lineman, brother of the victim. J. R. Harbuck, lineman for the telephone company, also assisted.

A physician and an ambulance were called. Upon his arrival, within a few minutes, the doctor prepared an adrenalin injection which was administered by the victim's brother while respiration was still being given atop the pole. Mr. Prickett was carried to the Columbus City hospital, where he was given blood plasma in the treatment for shock. Unconscious for six hours after the accident, the victim also suffered severe burns on the back of his neck, right leg and foot.

The committee appointed to investigate the accident said in its report "Seldom has any man in any critical emergency displayed better judgment than did Jack Arrington in saving the life of his fellow workman. In rescuing Mr. Prickett, several things had to be considered in time of seconds. We wish to congratulate Mr. Arrington and give him credit for a splendid job well done. J. R. Harbuck, Southern Bell lineman; W. L. Sewell, foreman, and Albert Prickett and all other workmen present also deserve credit for valuable assistance rendered."

This photograph was made by Claude H. Murray, Columbus District Engineer, Georgia Power Co., a few minutes after Raymond Prickett, Company lineman, had received an electric shock when he contacted an energized line while working with a Columbus crew on a line there recently.

The picture, made after Mr. Prickett's breathing had been restored, shows W. L. Sewell, at left, and Albert Prickett, brother of the victim, bringing the injured man down the pole, while A. C. Henderson, at right, and Allen Anderson, below, stand by to give assistance. In the circular photograph is Jack Arrington, the first to reach Mr. Prickett, to break his contact with the "hot" wire and begin application of artificial respiration. Mr. Arrington's quick-thinking and fast work are credited with saving Mr. Prickett's life. The entire crew gave heroic assistance.

The Purchasing Outlook for Electric Utilities

By R. W. T. Purchas
The Middle West Service Company

Presented at Joint Meeting of Purchasing, Stores and Transportation Committee, EEI, and Materials and Supplies Committee, AGA

THIS is an attempt to indicate what the Purchasing and Stores Personnel of the electric utility industry may expect over the period of the next few years.

For obvious reasons the argument will not be directed at the prospects for any individual utility company or group of companies but will be directed at the composite electric utility industry as covered by EEI statistics.

In the discussion, reference will be made to the sources of the basic data used but it should be recognized that the derived estimates and opinions are only those of an individual and they should be so considered.

Industrial Power Sales

I presume all of us are aware that the five-year period 1935 to 1939 has been considered 'average,' for pre-war conditions, to the degree that many indices of production, prices, etc., have been based on "1935 to 1939 equals 100." This period, we may recall, included one boom year 1937 and one year of 'recession' 1938. This discussion, unless otherwise stated, is based on the assumption that the 1935/39 period was 'average' also, pre-war, for the electric utility industry.

Kwhr sales to ultimate consumers during this 5-year period and in the year 1939 were distributed as follows (EEI):

	Average 1935/39	*Year 1939*
Residential & Farm.....	20.5%	21.7%
Comm. & Industrial.....	69.1%	67.9%
All other	10.4%	10.4%
Total	100.0%	100.0%
Kwhr.—Billions	93.3	105.77
% of 1935/39 average...	100.0	113.3

War production started in 1940 in a small way and increased very rapidly from 1941 to 1944 inclusive. Kwhr requirements for Industrial Manufacturing and Mining increased from 91.8 Billion kwhr in 1940 to 172 Billion in 1944 (F.P.C.) an increase of 87.3%. Of these requirements utility companies as reported by the EEI furnished in the form of industrial power sales 59.6 Billion kwhr in 1940 and 113.8 Billion kwhr in 1944—about 65% of total industrial kwh requirements in both years.

It is of interest that while total kwhr sales of electric utilities increased 66.6% from 1941 to 1944 inclusive, kwhr demand increased only 35.4% (F.P.C.). The reason for this is clear—war loads are of the 2 shift and 3 shift kind for which one kw of demand results in twice and three times the number of kwhr that 1 shift operation would produce. This rather obvious fact was apparently overlooked by various authorities in the early days of the war when estimates of kw demand were prepared that were extremely high.

In 1940, nearly all industrial output was for civilian use but in 1944 only about 1/3 was for civilian use. In other words, of 113.8 Billion kwhr industrial power sales in 1944 about 75.8 Billion kwhr were for war production. These 75.8 Billion kwhr for war production were 38.4% of Utility Total Kwhr sales. The effect on kwhr sales of the imminent cut-backs and cancellations of war production is obvious. Mr. Krug has recently estimated that war production would be cut at least 50% within one year from VE day and it is estimated that the cut may be 35% in 6 months after VE day. Let us assume, for example, a reduction of 20% each 6 months for four 6-month periods after VE day. The estimated result on kwhr power sales and kw demand would be as follows:

After VE day	*Loss of Power Sales Kwhr-Billions*	*Reduction in Peak Demand Kw-Millions*
1st 6 months	8	2
1st year	24	4
2nd year	56	8

Beginning probably three to five months after VE day civilian production will increase rapidly and during the remaining months of the first year reestablish substantial industrial power sales. It is probable that kw demand with respect to kwhr sales for civilian production will rise more rapidly than it did in connection with war production which to a large degree was of the two shift and three shift variety with a lower ratio of kw demand to kwhr sales.

It seems indisputable that, with all due allowance for rapid reconversion to civilian production, the utility industry will experience during the first two years after VE day a rather drastic reduction in kwhr power sales and a substantial reduction in kw peak demand.

This implies from the Purchasing viewpoint a reduction in fuel purchases, some relief from an early need for constructing new generating capacity and the probable release from service and return to inventory of substation equipment. This opinion applies to the utility industry as a whole and is not valid for an individual company whose sales pattern differs substantially from that of the composite electric utility industry.

Residential and Rural Sales

Let us consider now the question of kwhr sales to Residential and Rural customers. During the War years sales to Residential customers have been affected by Daylight saving, restrictions on service extensions, restrictions on new home construction and lack of appliances (since 1942). An estimate by EEI indicates for the *average* residential customer in 1942:

Kwhr.	
1022	Total consumption
360 — 35%	for lighting
662 — 65%	for appliances

The major importance of kwhr consumption by appliances is to be noted.

Using EEI data for number of appliances sold, number of appliances in use, number of residential and rural customers, Census data for occupied dwellings, etc., I have estimated future sales of domestic electric refrigerators, ranges and hot water heaters. With 1935/39 data as a pre-war base the following estimates are derived:

Sales	*Refrigerators (000)*	*Ranges (000)*	*Water heaters (000)*
5 yrs 1936/40—EEI	10,403	1751	546
10 yrs 1941/50—Est.	17,674	5142	1627
5½ yrs. 1945/50—Est.	13,500	4100	1300
In use @ 12/31	*Refrigerators (000)*	*Ranges (000)*	*Water heaters (000)*
1940—EEI	16,235	2556	800
Saturation	61.2%	9.64%	3.02%
1950—Est.	27,200	5703	1987
Saturation	80.7%	16.92%	5.89%

These estimates indicate that, on the average, those utilities engaged in merchandising the larger domestic electric appliances may expect during the period 1945 to 1950 to handle the following *volume* of appliances in comparison with pre-war volume (not dollar values):

1945/50 Average Sales by number	*In % of 1936/40 average*
Refrigerators	130%
Ranges	234%
Water heaters	238%

This is an estimate of averages for the 5¼ year period from the fourth quarter 1945 to the end of 1950, inclusive. It is very probable that sales in 1946 and 1947 will be at much higher annual rates with lower average rates for 1948, 1949 and 1950. For example, 1946 and 1947 volume in per cent of the pre-war average might be as follows:

Sales, by number 1946 and 47	*In % of 1936/40 average*
Refrigerators	165%
Ranges	300%
Water heaters	375%

There will naturally be a very large volume in the smaller appliances, flat irons, vacuum cleaners, radios, toasters, percolators and fans, however a large proportion of these sales will be replacements which generally will not produce new or additional kwhr consumption.

Purchasing, stores handling, delivery, installation and servicing functions will be involved in this expanded volume of appliance sales.

As to lighting the General Electric Co. in 1943 estimated that in five years after V day Residential lighting sales would be 22 billion kwhr vs. 11.1 billion kwhr in 1940. Increases in lighting sales have varied generally with sales promotion but even in the absence of sales effort it is believed that a substantial increase in lighting kwhr sales to both Residential and Commercial customers is inevitable. Utility companies engaged in the sale of incandescent lamps may anticipate substantially increased sales of lamps to both Residential and Commercial customers during the period 1945-50.

This affects purchasing and stores-handling functions.

The estimates for major appliance sales together with an increase in lighting kwhr sales indicate an estimated *average* Residential consumption in 1950 as follows:

Kwhr 1441	Total Consumption
550 — 39%	for lighting
861 — 61%	for appliances

During the 10 year period ended 1950 I have estimated that the utility industry will have added about 7,600,000 Residential and Rural customers and that Residential and Rural Total kwhr consumption in 1950 will be 47.5 billion kwhr as compared with 29.8 billion kwhr in 1942 (EEI) an increase of approximately 60 per cent.

The number of Residential and Rural customers added from 12/31/35 to 12/31/40 was 4,906,000 (EEI) an average of 981,000 per year. This should be contrasted with the estimated average of 760,000 per year to be added during the 10 year period ended 1950.

This affects purchasing and stores functions in connection with meters, distribution transformers and service extensions for new customers.

Maintenance

We have read frequently about deferred maintenance providing a "backlog" for post war expenditure. The F.P.C. publishes statements of maintenance expenditures as reported by Class A and B utilities. To ascertain whether maintenance expenditures during the war period have been kept at the pre-war level (1939) the following tentative method is suggested:

1. Maintenance expenditures for generating plants should be adjusted to the 1939 price levels and based on kwhr output.

2. Maintenance expenditures for Transmission, Distribution and General property should be adjusted to the 1939 price levels and be based on the average investment in plant account.

To illustrate:

Maintenance Expenditures	*1939* (000)	*1940/43* (000)
Generating plant (FPC)	$39,884	$203,124
Adjusted to 1939 prices	39,884	184,000
Adjusted also to Kwh sales	39,884	214,000
Deferred	.....	30,000
Other property (FPC)	76,615	334,554
Adjusted to '39 prices	76,615	304,000
Adjusted also to average investment	76,615	317,000
Deferred	.....	13,000

These estimates suggest that by the end of 1943 maintenance of generating plant was about seven months behind "normal" and maintenance of other electric utility property was about two months behind "normal"—the 1939 rates of expenditure being taken as "normal." These figures should probably be increased to about nine months for generating plants and 2½ to 3 months for other property as estimates of condition at the close of 1944.

If there is any merit in such estimates an increase in maintenance expenditures to pick up "deferred" maintenance is indicated for the first two years after VE day.

This would affect purchasing and stores functions with respect to materials for maintenance.

Prices

No discussion of Purchasing and Stores prospects would have sense, I presume without some reference to prices. Price movements, since the base period 1935-39, for some of the principal commodities of interest to electric utilities have been as follows:

	% Increase 1944 over 1935/39
Operating Materials:	
Coal, bituminous MR (BLS)	23.3%
Gasoline TW, NY (BLS)	19.5%
Natural Gas, Industrial (AGA)	2.0%
Oil, crude Kansas, Okla. (BLS)	6.5%
Tires and Tubes (BLS)	37.5% ('43)
Maintenance Materials:	
Aluminum, ingot (BLS)	25.8% decrease
Copper Wire, Bare (AMM)	8.4%
Lumber (BLS)	70.0%
Motor, Vehicles (BLS)	27.5% ('43)
Pipe, CI, NY (AMM)	6.9%
Steel, Structural (AMM)	3.7%
Construction Costs:	
North Central Division (Handy)	
Electric Plant, Steam	4.1%
Substation Equipment	8.4%
Total Construction & Equipment	9.0%

Appliances:
As almost no appliances have been manufactured for civilians since a few months after Pearl Harbor any price index for the war period would have little meaning.

In considering these indices it should be remembered that the actual prices of some commodities in 1944 were higher than the invoiced costs by the amount of the subsidies paid in taxes. For example, copper pegged at 12c in 1944, actually cost 12c on the invoice and 1.27c lb in taxes; zinc 8.25c lb on the invoice plus 2.93c lb in taxes; crude oil the published ceiling price on the invoice plus up to 35c bbl in taxes (.75c bbl in Pa.). In due course subsidies will be terminated and if prices do not rise production of subsidized commodities will decline—on the other hand if prices are allowed to rise production will be maintained. The question as to which will occur will be settled quite simply by the demand for products now subsidized. It is my opinion that the demand after VE day will not require that portion of production now dependent on subsidies.

Future prices will be determined by a number of influences including:

The greatly increased productive capacity in many lines.
The demand in relation to unsubsidized production.
The rate of cancellation or cut-back of war production.
The retention or relaxation of price controls.
The treatment of demands for wage increases and for present weekly pay for fewer hours' work.
The exercise of self-restraint by buyers in competing for civilian goods until adequate production levels are reached.
The often mentioned "back-log" of requirements.
The need for large tax revenues for an indefinite period of time and the tax program for individuals.
The well established inflationary base or background.
Surplus Property operations.

Some of these have price-rise implications some the reverse. Any conclusions as to future price movements would require assumptions as to each of the listed ingredients. Depending upon the aggregate of the individual assumptions the result could be an explosive mixture, a fairly flat mixture or a sour one.

Supply:

The supply situation over the near-term for some of the principal items mentioned under Prices is estimated to be as follows:

Operating Materials:

Fuels, satisfactory. The SFA estimates the supply of coal at less than the demand, but, it is believed this estimate does not give effect to reduced utility and industrial requirements that will result from cut-backs and cancellations. Tires for civilian activities-supply will be short for some time.

Maintenance Materials:

Aluminum-plentiful. Copper wire and cable—"after VE day mill facilities will be adequate to handle orders at a volume approaching pre-war levels" (WPB). Steel products—satisfactory. Lumber (especially poles)—tight for some time. Automobiles—if utility companies have preference for business purposes—about nine months. Distribution transformers and motors—positions will improve rapidly and be easy after VE day.

Equipment, major:

An opinion given earlier suggests that a substantial reduction in demand will abate the demand for generating plant equipment. It has also been estimated that the Army, Navy and DPC have generating capacity in excess of 1,000,000 kw a good deal of which will be offered as Surplus in due course. Substation equipment: utility companies will probably have some idle capacity because of reduced war production—there should be substantial quantities available as Surplus Property—the position should therefore be satisfactory.

Appliances:

It will take five to six months to get production of refrigerators and ranges; vacuum cleaners and washing machine production can start at a substantial rate immediately after VE day. It is probable that many new manufacturers will enter the appliance field as a result of experience in producing technical items for war. Early production of new manufacturers should be regarded with caution.

Summary

This discussion has been an attempt to indicate to Purchasing and Stores personnel a method of estimating what the volume of activity for such personnel will be over the near future (to 1950).

To make the discussion concrete prospects have been estimated for the electric utility industry as a whole. As stated more than once the prospect for any individual company will depend upon its pre-war sales pattern, its war-time sales pattern and its post-war sales policies.

The opinions derived for the industry as a whole may be summarized as follows:

The first post-VE day effect will be a drastic reduction in kwhr power sales and a substantial reduction in kw peak demand.

This will mean reduced fuel purchases, more time to consider new plant capacity and a return to inventory of released substation equipment.

Residential and Rural customers added during the 10 year period 1940-50 will average per year about 75 per cent of the number added per year from 1935 to 1940.

This has implications as to the number of service extensions, meters and distribution transformers required for *new* customers.

Companies handling electrical appliances may anticipate an average annual volume from 1945 to 1950 about twice as great as the 1936-40 average. In the first two years the annual volume will probably be three times as great as the 1936-40 average.

This has obvious implications for Purchasing and Stores personnel.

Deferred maintenance at the close of 1944 was perhaps nine months behind pre-war schedule as to generating plant, 2½ to three months behind schedule as to Transmission, Distribution and general plant.

The implication is for increased maintenance during the first two years after VE day.

Price Trends for materials will be governed by a number of influences some inflationary, some deflationary.

No definite trend can be estimated until post-VE day policies as to production, price and wage controls and individual tax policy are known.

Supply conditions with reference to operating materials, maintenance materials, major equipment and appliances should, with a few temporary exceptions, be quite satisfactory.

JUICE THAT STEWED THE AXIS

Five years of war production have used up a lot of juice, to use a lay expression for one trillion—that's 1,000,000,000,000 — kilowatthours of electric power. That, according to Charles W. Kellogg, of the Edison Electric Institute, is what it took for America to arm itself and the Allies to defeat Germany and Japan. "The trillion kilowatthours of electric power consumed during the years of the war effort were greater than the total amount generated in the United States during the preceding ten years," said Mr. Kellogg, "and more than could have been produced by all the generating systems of the Axis combined."—*New York Herald Tribune.*

167 Electric Companies Announce Stand on Federal Power Projects

ONE HUNDRED AND SIXTY-SEVEN of the nation's electric light and power companies, representing a large part of the business-managed electric industry, in a joint statement last month made known their position with regard to proposed river developments by the United States Government. These developments, providing for the creation of the Missouri Valley Authority and other projects similar to TVA, as well as the completion of several already in operation, entail an estimated initial expenditure in excess of $3,850,000,000.

Four specific points are made by the electric companies in defining their attitude toward these government undertakings:

1. Whenever a dam is proposed, all of its purposes should be clearly defined in the legislation—flood control, navigation, irrigation or power.

2. Government-produced power should be sold to existing power systems without special privilege or discrimination, so as to avoid costly duplication and to insure widest use and lowest rates.

3. Any savings thus effected should be passed along to consumers under state or other regulations.

4. Government may properly regulate business, but should not operate business.

The 167 electric companies sponsoring the statement are members of a group participating in a campaign to keep the public and their own investors informed regarding problems affecting the industry. C. Hamilton Moses, president of the Arkansas Power and Light Company, one of these companies, made the following comment regarding the announcement:

"This announcement is designed to clarify the position of the electric companies regarding river developments along the pattern of TVA. The companies have been wrongfully charged with attempting to block such valley developments.

"This is an injustice to the electric companies. We do not oppose any government project of this kind provided it is economically sound. What does concern us is the threat of annihilation of the business-managed electric industry by the use of taxpayers' money to subsidize government power plants unfairly competing with the American business man."

The statement in full follows:

"River development and flood control rank high on the list of America's post-war plans. Many of these projects call for dams which may also produce electric power.

"This involves issues that should be discussed and settled now—*rivers to cross in advance.*

"Many of us in the power business have had a long experience with riverside plants, in the production of both steam-generated and hydroelectric power. In fairness to all taxpayers and in the interest of the many million users of electricity, we think we ought to outline our convictions and suggestions on river development and flood control.

"1. When a dam is proposed, all of its purposes should be clearly defined in the legislation—flood control, navigation, irrigation or power. And just as clearly, the benefit to the people affected should justify the cost.

"2. If power is produced at government-built dams, it should be sold to existing power systems, without special privilege or discrimination. This will save the expensive duplication of transmission facilities, help to co-ordinate the entire power supply of each region, and assure its widest possible use at the lowest practical rates.

"3. Any savings made possible by this plan should be passed along to the users of electricity, under regulation by State Commissions or other properly constituted regulatory bodies. This will assure all the benefits of river development and hydro-power without the added expense of government going into business and competing with its own citizens.

"4. Government in *any* business endangers *all* business. Government in business escapes many normal business obligations, enjoys free mail, pays no federal taxes, and few, if any, other taxes, little or no interest. If government can sell electricity on this basis, it can sell shoes, groceries, automobiles, or anything else the same way. Government may properly *regulate* business in the public interest but should not *operate* business. It should not play in the game for which it makes the rules. In other words, *government should not try to be umpire and pitcher at the same time.*"

Department of Labor Reports Now Segregate Electricity and Gas in Cost of Living Breakdowns

STEADY declines in electric rates even during the war, hitherto not shown separately in Department of Labor reports, have now been revealed by the Department for the first time. These declines in rates, representing savings to millions of electricity customers, previously have been hidden by their inclusion with other living costs.

For a period of years the electric light and power industry through its spokesman, the Edison Electric Institute, has protested to the Department of Labor over the fact that electric rates have been grouped with the cost of "fuel and ice," thus making it appear that these rates were going up rather than down.

The June issue of the Monthly Labor Review, published by the Department of Labor, met with the gratification of the executives of the business-managed light companies, since the review for the first time made clear to its readers that during the period from August, 1939, to April, 1945, the average price of gas and electricity had dropped 3.5 per cent.

Grouping gas and electricity with ice and coal had made it seem in prior reports that each of these living expenses were climbing.

The averages of 1935-39 are taken as 100 per cent in the Labor Department statistics. A month before the start of the war electric and gas rates were 99 per cent of this average. At the time of the "Little Steel" decision electricity and gas were 97.5. When the "hold the line" order was given these rates had come down to 96.6 and by April of this year had dropped again to 95.5.

During the 1939-45 period such living costs as food had gained 46.1 per cent, clothing 43.6 per cent, and house furnishings 43.8 per cent. Fuels other than gas climbed 28.5 per cent.

Spokesmen for the electric industry commented that there had been a steady decline in rates of business-managed companies since the inception of the industry.

The Bell System's Safety Observation Plan

By Erle S. Miner
American Telephone and Telegraph Company

NO JOB IS SO IMPORTANT AND NO SERVICE IS SO URGENT THAT WE CANNOT TAKE TIME TO PERFORM OUR WORK SAFELY.

THE challenging slogan above is much more than a catch phrase to the Bell System. It is a guiding principle in performing telephone work throughout the System.

As the need for training and the adoption of safe working habits has become better understood, there has been a parallel development in the methods by which these may be accomplished.

One method recently introduced in the System, and already promising to be of great value, is the "Safety Observation Plan." Its principle feature is that, in carrying on their day-to-day jobs, plant department supervisors at the various organization levels, and particularly the first-line supervisors who are directly responsible for the safety of their men, make observations of work while it is in progress.

These observations cover the use of tools, material, and equipment, as well as any unsafe method or other of procedure in performing the work which indicates a lack of planning or failure to take into account all the circumstances surrounding the job.

The plan incorporates procedures developed and used by a number of System companies over a period of years. These procedures have varied somewhat as to the making of the observations, the time allotted, the collecting and summarizing of the data, and the way in which the data were used. In general, however, provision was made for a series of observations of men while at work so that steps could be taken to reduce unsafe practices.

Analyses indicate that some 60 per cent of accidents are caused by the use of non-standard or short-cut methods rather than the safe ways learned by experience which are outlined in the Bell System practices, safety codes, and other local instructions.

Another 10 per cent of accidents are attributable to faulty supervision and poor planning. Consequently, any procedure that will aid in detecting unsafe practices, their frequency and their causes, can be followed by properly focused training and supervisory efforts leading to a safer and more efficient job.

The plan is similar in some respects to the established preventive-maintenance programs and quality-inspection plans. In these activities, plant conditions are observed, results are studied, and corrective measures are taken prior to the interruption of telephone service. In the safety observation plan, unsafe practices observed at the time the work is being done are normally discussed at the time with employees and corrective measures are taken before accidents can happen. The plan is a sampling procedure for determining the frequency as well as the causes of unsafe work practices so that preventive efforts may be directed more effectively where required.

The "observations," each usually of 15 to 20 min duration, are recorded on small "Unsafe Practice Observed" forms. Unsafe practices and their causes, as well as recommendations for general training courses, issuance of new or revised instructions, etc., which appear to be desirable, may be made in the space provided.

These small forms are forwarded through lines of organization to the district plant superintendents or comparable group heads, where they are summarized on larger forms. District summaries are combined to make division and area summaries. District, division and area organizations study the reports and summaries and, on the basis of such information, take action which will assure these results:

1. Determination of underlying causes of unsafe practices.
2. Designing and carrying out of needed training projects.
3. Improvement or changes, if advisable, in Bell System practices, safety codes, and other instructions.
4. Additional supervisory attention when and where required.
5. Other necessary changes in existing safety programs.

In an endeavor to bring about improvements in the plan and to stimulate its functioning, it has been found advisable to discuss the results of the observations at supervisory and employee meetings held at regular intervals throughout the year. At these meetings, emphasis is placed on the safe and efficient way of performing the various work operations, and motion pictures, posters, safety publications and other aids are used to focus attention on specific problems.

Fundamental to the application of the safety observation plan is this principle: Fewer unsafe practices mean fewer accidents, and fewer accidents mean fewer injuries.

To make this point clear, consider for a moment three situations in a familiar operation: A pole replacement job.

In Situation I, a line crew is at work, with one lineman up the pole, using a hand axe to make good the attachments transferred from the old pole to the new one. Another lineman is completing the back-fill at the base of the pole. A third lineman has just pulled the "nose bag" up to the first with some additional equipment. The foreman is standing nearby, watching the operation. Before reaching out for the bag of equipment, the lineman on the pole places the hand axe in the keeper of his body belt—and that is that. There is no accident and, therefore, no injury.

Situation II is identical except for this point: The man a-top the pole let go of the hand axe without making sure it was in the keeper of the body belt. The foreman shouted a warning—too late. The tool whizzed past the ear of the lineman at the foot of the pole and bounced harmlessly on the concrete sidewalk. An accident did happen, but the men laughed it off. After all, nobody was hurt.

Situation III also differed only in this one respect: The hand axe took a different course by a mere six inches and struck the lineman on the head. The victim was given skillful first aid and

a quick trip to the hospital. That accident resulted in injury.

Now these three situations can be fitted into the basic principle. In Situation III, a man was injured. Situation II is just one of the many cases where something went wrong, but no one was hurt. The same series of events took place, but the lineman at the foot of the pole happened to be just outside the path of the falling axe.

But where does Situation I fit into the picture? It is the key to the problem, because the events or unsafe practices in Situation I, or a number of similar situations, led up to the accident which caused the injury. It is much too late to apply corrective action in Situation II, because the unexpected event has happened and it is only by chance that an injury does not take place.

Who would venture a guess as to how many unsafe acts take place before an accident occurs? How many times before has one man worked on the ground directly below another on the pole and how many times has the man on the pole placed a tool in the keeper of his belt without making sure it was fast before he let go? How many times has the foreman permitted one man to work on the ground beneath another man in the air? How many times has the foreman watched his man put tools back in his belt to see if he always makes sure the tool is in the keeper before he lets go?

The answer is—many times. Whether "Situation I," or unsafe practices, take place a hundred or a thousand times before an accident occurs is not known. But it is evident that in order to reduce the number of injuries, the number of incidents or errors that lead up to the accident must be reduced. That is, Situation I must not take place if Situations II and III are to be prevented.

That telephone work is relatively safe is evidenced by recent records established by some of the units of the Bell System. One plant division of about 650 men has worked seven years without a disabling injury. An area having 1500 men has worked more than two years without a lost time case. These are but a few of many cases that could be cited.

That there is still a job to do, however, is indicated by the following summary of unsafe practices observed during the first year the safety observation plan was in operation in one large organization. These figures represent the results of many thousands of observations of the work of some 2000 men during an entire year:

	Number of Unsafe Practices Observed
Ladders	562
Hand Line	165
Safety Straps and Body Belts	199
Climbers	188
Goggles	97
Poles Aloft	130
Poles, Other	118
Working Aloft, Other	52
Guarding Employees and Public	355
Motor Vehicles	342
Tools and Materials	1059
Rubber Equipment	28
Miscellaneous	152
Total	3447

As a matter of further interest, the 562 ladder unsafe practices included 34 cases of over-reaching, 63 cases of not tying pull rope to rung, 33 cases of working on an unguarded ladder at a hazardous location, and others. Types of unsafe practices in other classifications may be assumed from the examples given.

While the number of unsafe practices listed here might make it appear that safe practices in this particular organization were extensively disregarded, quite the opposite is true. The total of observations made indicates the extent and thoroughness of the cooperative efforts being made to eliminate accidents.

Fortunately, most of the unsafe practices do not result in accidents or personal injuries. Continued improvement lies, of course, in eliminating in so far as humanly possible, all unsafe and inefficient operations. This is what the safety observation plan is designed to accomplish.

While the plan is similar to other plans that have been used for sampling results and focusing attention on where to obtain improvement, it differs in one important respect. Most of the other sampling procedures provide for inspecting the completed work, while the safety observation plan provides for observing the work in progress. For this reason, the plan should be particularly helpful in establishing the habit of observing the circumstances surrounding the job before the work starts, and looking one step ahead as the work proceeds.

This same habit of always looking one step ahead should be helpful in reducing off-the-job accidents as well as those which happen on the job. This is because a person who has developed a habit on the job will be more likely to take short cuts or chances wherever he may be.

The safety observation plan, which was made available last year to all Bell System operating companies for study and consideration, has not been in operation a sufficient length of time to determine fully its effectiveness on a system-wide basis. Several companies have reported that it played an important part in reducing accidents during 1943.

John F. Gilchrist

JOHN FOSTER GILCHRIST, retired vice-president of Commonwealth Edison Company, Chicago, and one of the electrical industry's best known pioneers, died on August 4 at his summer home near Mokena, Illinois, after a long illness. He was 77 years of age, and had given 57 years of service in the utility business. Mr. Gilchrist was president of the National Electric Light Association during the administrative year 1911-1912.

Since 1943 Mr. Gilchrist had been chairman of the board of the Chicago & Illinois Midland Railway Company, an Edison subsidiary.

A native Chicagoan, Mr. Gilchrist entered the employ of the old Chicago Edison Company, principal predecessor of Commonwealth Edison Company, in 1887 as an office boy and shortly afterward became the first employee of the meter department. Rising rapidly through the ranks, he was appointed assistant to the general superintendent in 1891, general contract agent in 1896 and assistant to the president ten years later. He was elected vice-president in charge of the purchasing, stores, transportation and statistical departments in 1914.

Nationally prominent in the electrical industry, Mr. Gilchrist made many constructive contributions to its development and progress. He was a past president of the Association of Edison Illuminating Companies and the Electric Association of Chicago, as well as the N.E.L.A. He also served as a director of the Illinois Children's Home and Aid Society, as vice-chairman of the Salvation Army Board of Chicago and was a leader in fund-raising activities of the American Red Cross, Chicago Civic Opera Company and Chicago Community Fund.

Public Learns About Kilowatt Hours Through Educational Advertising

A RECENT issue of *The Front Line,* employee magazine of the Iowa Electric Light and Power Company reports that with the faithful help of Reddy Kilowatt its advertising department learned recently on the basis of "before and after" surveys of public opinion that the term *kilowatt hour* can be sold to the public so that they know and understand it.

"A nation-wide survey," the article continues, "taken during the early months of 1944, revealed that few people knew what a 'kilowatt hour' was. Because for a great many years the residential use of kilowatt hours has increased, it seemed especially important to public utility men that an educational campaign of some type be undertaken. During the period of increased kilowatt hour consumption, the average cost per kilowatt hour decreased with the result that a fairly constant level for average monthly bills was maintained. Recognizing that the average monthly use of kilowatt hours will undoubtedly climb rapidly in the postwar period, public utilities were faced with a grave public relations problem. If customers noted only their dollar and cents bill without taking into account their kilowatt hour consumption, a postwar impression would be one of increased rates, instead of increased consumption.

"A campaign was undertaken by the advertising department of the company to sell kilowatt hours when a Cedar Rapids survey disclosed that 93.5 per cent of the people looked at the amount of their bill only, while a slight .5 per cent noted kilowatt hours used. A total of 48.5 per cent of the respondents knew the term used to express quantity of electricity; 51.5 per cent did not know. Only 15.5 per cent of the people interviewed understood the term 'kilowatt hours.'

"A series of 12 newspaper advertisements were prepared to explain kilowatt hours and they were run on a twice-a-month schedule for a six-months' period, starting in October, 1944. A Reddy Kilowatt message about kilowatt hours was put on service bills and occasional radio commercial time carried a kilowatt hour message.

"When the final newspaper advertisement had appeared in April, the company decided to re-check to learn what the educational campaign had accomplished. In answer to the first two questions, encouragement was modest with 'meter reading noted' jumping from 2 per cent to 12.1 per cent and 'kilowatt hours used noted' climbing from 3 per cent to 10.3 per cent. However, the progress was more marked on the questions: 'Gallons is the term used to express a quantity of liquids and yards to express distance, do you know the term used to express a quantity of electricity?'

Yes—74.7 per cent.
No—25.3 per cent.

" 'Do you know what the term "Kilowatt Hour" means?'

Yes—42.2 per cent.
No—57.4 per cent.

"This shows a jump from 15.5 per cent of the people to 42.2 per cent who know what a kilowatt hour is.

"During the first local survey 72.5 per cent of the people correctly identified Reddy Kilowatt and in the second survey 83.9 per cent were correct. The growing popularity of the electrical fig-

(*Continued on next page*)

Remaining Market for Rural Electrification Is Only 3,500,000 Occupied Homes

During the four and a half year period from April 1, 1940, to October 1, 1944, the number of occupied dwellings wired for electricity increased by 909,000 on farms and 742,000 in rural non-farm areas, according to a recent study of the U. S. Bureau of the Census. This left only 4,185,000 occupied rural (farm and non-farm) dwellings to be electrified in October of last year. Of this number, at least 500,000 will have been connected by the end of this year (1945) and some 200,000 more are located in villages and hamlets that long have had electric distribution facilities, leaving only about 3,500,000 additional occupied dwellings still to be served as the total goal of what is commonly referred to as rural electrification in the United States.

The accompanying tabulation shows the details of the changes in housing in the United States during the last four and a half years. A striking fact is that, while over 900,000 farm dwellings were connected to utility lines, some 670,000 other farm homes were vacated.

LIGHTING EQUIPMENT—OCCUPIED DWELLING UNITS

*(U. S. Bureau of the Census)**

	Number		Change, 1940 to 1944	
	1944*	1940	Number	Per Cent
Urban (a)				
Total Dwellings	23,575,000	20,597,000	+2,978,000	+14.3
Electric Lights	22,559,000	19,447,000	+3,112,000	+16.0
Per cent Wired	95.6	94.4		
Rural Non-farm (b)				
Total Dwellings	7,181,000	7,151,000	+ 30,000	+ 0.4
Electric Lights	6,260,000	5,518,000	+ 742,000	+13.4
Per cent Wired	87.1	77.2		
Rural Farm (c)				
Total Dwellings	6,437,000	7,107,000	− 670,000	− 9.4
Electric Lights	3,173,000	2,264,000	+ 909,000	+40.1
Per cent Wired	49.3	31.9		
Total United States				
Total Dwellings	37,193,000	34,855,000	+2,338,000	+ 6.7
Electric Lights	31,992,000	27,229,000	+4,763,000	+17.5
Per cent Wired	86.0	78.1•		
Gas Exclusively	672,000(est)	572,000	+ 100,000(est)	+17.5
Gas or Electricity	32,664,000	27,801,000	+4,863,000	+17.5

Notes: * The Census release tabulated "gas and electricity" only. The 1940 figures are derived from the Housing Census of that year and the 1944 data has been calculated on the assumption that the increase in the number of occupied dwelling units supplied with gas (natural, mixed or manufactured) has been of the same proportion as that reported by the Census for "gas or electricity" combined.

(a) All places with populations of 2,500 or more.

(b) All places with populations less than 2,500 and all country dwellings occupied by persons not engaged in farming as their principal source of livelihood.

(c) Excludes a relatively small number of farms located within limits of "Urban" communities.

In 1940, there were 915,364 unoccupied rural non-farm dwellings of which 675,000 were wired for electricity and 535,722 farm dwellings of which 88,000 were wired.

Source: U. S. Bureau of the Census: Housing-Special Reports Series H-45 No. 2, 7-21-45.

Public Learns

(*Continued from preceding page*)

ure is well demonstrated by the fact that a survey taken three years ago disclosed that 64 per cent of the people were acquainted with the public utility trademark.

"On the basis of the encouraging progress made in the original educational campaign, a second series of advertisements along the same line is now in process."

New Edition of Code for Protection Against Lightning

THE National Bureau of Standards, Department of Commerce, in cooperation with the American Institute of Electrical Engineers, under the procedures of the American Standards Association, has for the past 24 years sponsored a "Code for Protection against Lightning." Handbook H40 is the latest edition of this publication.

Part one of the Handbook deals with the protection of persons. Part two has to do with the protection of buildings and sets up standards for adequate rodding of such structures. Lightning rods are recommended for tall or isolated frame or masonry structures but are generally unnecessary for steel framed buildings since the steel frame itself is a good conductor of electricity.

Part three of the publication covers structures containing flammable liquids. Developments during the past seven years have made it necessary to rewrite completely this portion of the code which now offers a number of modern methods for protecting oil refineries, tank farms and the like. This revision was prepared by a representative committee headed by W. W. Lewis of the General Electric Co., a nationally known authority on lightning and lightning protection.

"As a war measure," the Bureau states, "it is vitally important to safeguard the nation's supply of petroleum in storage, in process of manufacture and in final form as gasoline, fuel oil and the thousands of other necessary products made from it. The revised part three should help in the protection of this vital oil supply from one of its greatest hazards."

Handbook H40 is illustrated. Copies may be purchased from the Superintendent of Documents, Washington 25, D. C., at 20 cents each.

Saturation of Electric Refrigerators Now 68%

In October, 1944, nearly 70 per cent of all occupied dwellings wired for electricity or piped for gas were equipped with mechanical refrigerators. Of all other dwellings, about two-thirds had ice boxes and one-third employed other methods of keeping food cool (such as adequate spring houses, cool cellers, etc.) or else, as in urban and rural slums, were content with no means of refrigeration at all.

The following table shows the situation last year, when 22,151,000 homes had mechanical refrigeration units, as compared with 15,364,000 four and a half years earlier, on April 1, 1940. The gain of 6,495,000 units during this period compares with actual reported sales of 5,977,000 *electric* refrigerators from April 1, 1940, to April 1, 1942, when further production was stopped for the war period.

REFRIGERATION EQUIPMENT IN OCCUPIED DWELLINGS

(U. S. Bureau of the Census—October, 1944)

	Urban (a)	Rural Non-Farm (b)	Rural Farm (c)	Total
Occupied Dwellings	23,575,000	7,181,000	6,437,000	37,193,000
With Gas or Electricity	22,917,000	5,394,000	3,353,000	32,664,000
Mechanical Refrigerators	16,091,000	4,117,000	1,943,000	22,151,000
Per cent of Dwellings	68.3	57.3	30.2	59.6
Per cent with Gas or Electric	70.2	76.3	57.1	67.8
Ice Boxes	6,094,000	1,812,000	1,778,000	9,684,000
Per cent of Dwellings	25.8	25.3	27.6	26.0
Other or None	1,390,000	1,252,000	2,716,000	5,358,000
Per cent of Dwellings	5.9	17.4	42.2	14.4

Source: U. S. Bureau of the Census "Characteristics of Occupied Dwelling Units, for the United States—October, 1944." Housing—Special Reports E 45, No. 2, page 8.

P. L. Smith Heads Newly Organized National Association of Electric Companies

FORMATION of an industry-wide association of electric light and power companies with headquarters at Washington, D. C., has been announced by its organizing committee consisting of A. C. Spurr, Fairmont, W. Va.; James M. Barry, Birmingham, Ala.; and K. M. Robinson, Spokane, Wash., all operating electric company officials.

Tentatively named The National Association of Electric Companies, its president is Purcell L. Smith of Chicago, who has resigned as president of the Middle West Corporation, which office he has held for over seven years. Mr. Smith was asked to take the presidency of the association because of his accomplishments and long experience in the operation of electric light and power companies.

Beginning with a representation of 13 million distributing meters, or about one-half of the industry, the association will be modeled functionally along the lines of the Association of American Railroads. A large board of directors is being selected on a regional basis.

The purposes of the new association, it was stated, will be to further the interests of the customers, employees and investors of the member companies; to coordinate regional activities among them to maintain the integrity and credit of the industry; to further cooperation between governmental departments and agencies dealing with them and with the supply of electric light and power; to present the facts concerning public benefits resulting from the operation of taxpaying electric utility companies by business men under governmental regulation as distinguished from government ownership and operation.

In furtherance of these objectives it is the purpose of the new organization to conduct a broad program designed to demonstrate the important contribution of this industry toward a sustained and balanced national economy and to continued large employment.

PERSONALS

PURCELL L. SMITH, who was named president of the National Association of Electric Companies recently organized, has been president of Middle West Corp., and chairman of the board of Middle West Service Co., since December 1, 1937. Previously, from 1934 to 1937, he was vice president in charge of finances of Commonwealth Edison Co. and played an important part in effecting a consolidation of the capital structures of the Commonwealth Edison Co., Public Service Co. of Northern Illinois, Western United Gas & Electric Co. and Illinois Northern Utilities Co.

A native of Chicago, Mr. Smith entered the utility field in 1916 from the investment firm of Lee, Higginson & Co., joining the North American Light & Power Co. as cashier. In 1923 he became associated with the Illinois Power & Light Co. as assistant treasurer and subsequently treasurer and vice president. He left to join the National City Co. of New York, an affiliate of the National City Bank, in 1929, first as manager of the public utility department and later as assistant vice president, a position he held until 1934 when he returned to Chicago as vice president of the Commonwealth Edison Company.

LT. COL. WHITNEY STONE has been elected president of Stone & Webster, Inc., succeeding GEORGE O. MUHLFELD, who now becomes vice chairman of the board of directors. The new president is a son of the late Charles A. Stone, who with Edwin S. Webster, present chairman of the board of directors, organized the firm as a partnership in 1889.

Colonel Stone first joined the firm of Stone & Webster in 1930 and became an executive vice president in 1936. In January, 1942, he resigned his position and withdrew from all his directorships to join the Army Ordnance Department, and since that time has served in the New York, Cleveland and Boston Ordnance Districts. During the past year until the Army released him to return to Stone & Webster, he has been Deputy District Chief of the Boston Ordnance District.

Mr. Muhlfeld, who now becomes vice chairman of the board, has been associated with the Stone & Webster organization for more than 40 years, serving as president since 1931.

COL. FRANK E. BARR, vice president of the Kansas Gas & Electric Co., Wichita, Commandant of the Rehabilitation Center at Camp Bowie, Texas, has returned to his position with the Kansas utility. Mr. Barr was called to active service in 1942, he having been a Lieutenant Colonel in the Officers' Reserve Corps since the last war. After several assignments he was finally transferred to Camp Bowie.

WILLIAM L. COLLINS has been elected a vice president of Niagara Hudson Power Corp. Mr. Collins is well known in the utility field.

He began his career in Lockport, N. Y., in 1905 with the Niagara, Lockport & Ontario Power Co. and in 1927 he was elected a director and vice president of that organization.

Mr. Collins is also an officer of several other Niagara Hudson subsidiaries. He is vice president and a director of Buffalo Niagara Electric Corp. and the Lockport and Newfane Power & Water Supply Co. and vice president of Buffalo Niagara & Eastern Power Corp. and the Niagara Falls Power Co.

Mr. Collins has long been active in many civic undertakings in the Buffalo area. He is chairman of Civilian War Services and a member of the executive committee of the Buffalo War Council. For five years he was chairman of the Buffalo Municipal Housing Authority.

C. FRED WESTIN has been appointed director of advertising and publicity for New Jersey Power & Light Co., Dover, N. J. For the past three years, Mr. Westin has served as editor of the plant newspaper at Picatinny Arsenal, where he was assigned to the public relations office. He also served as editor and advertising manager of the employee publication, "The News-Barrage."

Announcement has been made by the Georgia Power & Light Co., Valdosta, Ga., of the election of JOHN W. LASTINGER as a vice president.

Mr. Lastinger, who is a native of Valdosta, has been with the company since 1926 and since 1932 has been serving as district manager of the Valdosta district of the company. He has also been on the company's board of directors for a number of years.

Long active in civic affairs in Valdosta, Mr. Lastinger is a vice president of the Chamber of Commerce.

WILDER MOORE, recently sales manager of the Attleboro (Mass.) Steam & Electric Co., has been appointed merchandising manager for the central district of the New England Power System, with headquarters at Worcester, Mass. Mr. Moore joined the Quincy (Mass.) Electric Light & Power Co.'s sales staff in 1936. He was transferred to Attleboro in 1938.

ROBERT E. GRAY, sales supervisor for New England Power System companies in the Leominster-Gardner area in Massachusetts, has been appointed district merchandise manager for the Fall River Electric Light and Attleboro Steam & Electric companies, also affiliated with the system. Mr. Gray became sales manager of the Gardner company in 1929 after ten years of sales work with the Narragansett Electric company in Providence, and in 1936 was transferred to Leominster. He has been succeeded at Leominster by DOUGLAS W. BONNER.

DR. ADAM S. BENNION has been elected vice president of the Utah Power & Light Company. The company's relations between its employees, its stockholders, its customers and the public are being consolidated into one department with Dr. Bennion in charge.

Dr. Bennion joined the company in 1928 as a personnel director and in 1934 he was made assistant to the president. He holds a master's degree from Columbia University and a doctor's degree from University of California and is widely known as an educator, speaker, civic leader and business man. During a period while his connection with U. P. & L. was terminated, Dr. Bennion was Republican candidate for U. S. senator from Utah last fall.

GEORGE D. BOYD, manager of commercial sales for the Monongahela West Penn Public Service Co. at Fairmont, West Virginia, has resigned.

H. B. HERYFORD, who has been associated with the Pacific Gas & Electric Co. for 42 years, serving as manager of the Stockton division for the past 17 years, has retired. He will be succeeded by ARTHUR D. CHURCH, now office assistant in San Francisco to A. Emory Wishon, vice president and general manager of the company. Mr. Heryford started in the utility business in 1903 with the Colusa Gas & Electric Co., which later became part of the P. G. & E. system. Mr. Church has been associated with Pacific Gas and its predecessor companies since 1914.

FERDINAND O. WALD has been appointed meter superintendent of the Utah Power & Light Co., Salt Lake City, to succeed WALTER J. MCMINN, retired. Mr. Wald has been with the Utah Power & Light Co. since 1920. Mr. McMinn retired after completing 38 years of service.

MORTON B. FOWLER, vice president and treasurer of the San Diego Gas & Electric Co., has retired after 41 years of service. Mr. Fowler's association with the company began in 1897 when he went to work for Dr. R. M. Powers, one of the founders. Subsequently, he was made secretary of the utility when it was purchased by H. M. Byllesby & Co. The system later became a part of Standard Gas & Electric properties, and in 1932 Mr. Fowler was promoted to vice president and treasurer, retaining that position when the San Diego system became independent in 1941. Succeeding Mr. Fowler as treasurer is J. M. BOURUS, formerly general auditor, who joined the company in 1918. Previously he was associated with the Oklahoma Gas & Electric Co. RAY C. CAVELL, head of the engineering department, has been made secretary. Mr. Cavell joined the San Diego company in 1914.

Announcement has been made by the Superior (Wis.) Water, Light & Power Co. of the retirement of A. N. ANDERBERG, vice president and secretary, after 48 years of service. F. A. ROBBINS, engineer, has also retired. Mr. Robbins has been with the company since 1918.

As a result of the retirement of Mr. Anderberg and Mr. Robbins, the following changes have been made:

GEORGE A. CORINE, formerly general superintendent, has been made vice president and general superintendent; EDGAR L. SMITH, formerly treasurer, is now secretary and treasurer; CLARENCE B. RUDE, as assistant secretary and assistant treasurer, has assumed direct supervision over all accounting; HARVEY C. SARGENT has been appointed engineer and electrical superintendent and will have charge of general engineering and electric operations.

Mr. Corine, the new vice president and general superintendent, started in the utility industry with the water and gas department in Duluth in 1920. In 1926 he became identified with the Superior Water, Light & Power Co. as superintendent of the water and gas department, and in 1940 he was made general superintendent of the company.

Mr. Sargent, recently made engineer and electrical superintendent, entered the employ of the company in 1932 as electric meter foreman and was advanced to electrical superintendent in 1940. He previously worked for four years in the electrical department of the Wisconsin Public Service Corp. in Green Bay, before entering the University of Wisconsin in 1927. While attending the university, Mr. Sargent was employed as assistant director of the University of Wisconsin standards laboratory. He was graduated from the university in 1931.

EDMUND J. THIMME, assistant to the division superintendent, Passaic Division, electric distribution department, Public Service Electric & Gas Co., Newark, N. J., has been appointed division superintendent in that division, succeeding GEORGE S. CURTIS, who retired after 55 years of service with Public Service and predecessor companies. JOSEPH J. GLATZEL, division substation engineer, central division, electric distribution department, has been named assistant division superintendent in the Passaic Division.

LELAND D. MCCORMAC, vice president of Central New York Power Corp., Syracuse, N. Y., and manager of the company's Utica area, has been appointed vice president in charge of the company's commercial operations. Mr. McCormac will transfer his activities to the Syracuse headquarters of the company on July 1.

Mr. McCormac has been with the company nineteen years, starting as land and tax agent in 1926. He was successively manager of the publicity, claims and personnel departments, and in 1934 was made a vice president and general manager.

B. C. CARPENTER, manager at Rome, has been appointed manager at Utica to succeed Mr. McCormac. MAJOR FLOYD A. WRAY, honorably discharged this month from the United States Army, has been appointed manager at Rome to succeed Mr. Carpenter. Major Wray was manager at Cortland, when he entered military service in 1943. T. P. FEDERER, sales promotion supervisor at Syracuse since 1929, has been appointed manager at Cortland. Mr. Federer has been with the company 22 years.

CRAD BRAZEL has been elected Assistant Controller of the Philadelphia Company and Subsidiary Companies, of Pittsburgh, Pa., to fill the vacancy caused by the death of John F. Davis on June 24.

Born in Trealeau, Wales, Mr. Brazel has been employed by various Standard Gas and Electric Company properties over a long period of years. From 1913 to 1918, he was Accountant-Traveling Auditor for the Southern Colorado Power Company at Pueblo, Colorado; from 1918 to 1919, Auditor for the Ottumwa Light and Power Company at Ottumwa, Iowa; and in 1920 to 1926, Accountant and Construction Auditor for Northern States Power Company at Minneapolis, Minnesota.

In 1926 he was transferred to Pittsburgh, and served as Auditor in the Pittsburgh Branch of the Byllesby Engineering and Management Corporation until 1936, when he was appointed Special Accountant for the Philadelphia Company. In August, 1939, he was made General Auditor for the Companies, which position he held until his recent election to assistant Controller.

Mr. Brazel is a member of the Masonic Fraternity, Pittsburgh Chamber of Commerce, Pennsylvania Electric Association, and American Gas Association.

He is married and the father of two children, Mary Catherine and Dorothy. He lives at 281 Arden Road, Mt. Lebanon, Pa.

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G-4—Electric Metal-Melting Furnaces (1/40)	.80	2.00
F-11—Electrification of Oil Refineries (10/38)	.30	.75
C-13—Steam and Electrical Requirements of Hotels (12/35)	.30	(members only)
C-2—Steam and Electrical Requirements of Office Building (4/35)	.30	.75
Power Sales Manual (1941)	3.50	5.00
Water Heating		
1-5 Standardization of Electric Water Heating Equipment (10/41)	.20	.50

National Educational Programs

Commercial Cooking		
Commercial Cooking Survey, 1942	$0.25	$0.25
Sales Training Manual—Commercial Electric Cooking, 1941	1-4 copies	$1.50
	5-14 "	1.25
	15 or more	1.00
Domestic Cooking		
Meals Go Modern Electrically (Special prices in quantity)	.25	.25
Electric Kitchens		
It Can Happen In Your Kitchen	$2.80 per 100	
How to Plan a Modern All-Electric Kitchen	$2.00 per 100	
The Principles of Kitchen Planning	.25	.25
Films		
"Dealer Education"—Series of 10 films and 10 discussion manuals. Five on basic selling and five on product selling, i.e., refrigerators, ranges, roasters, water heaters and laundry equipment. Price on meter basis for entire series	$125 to $275	

"Talk about Selling"

(*Continued from page 226*)

try is a real load builder. To help build your potential market it will pay you well to keep pace with this relatively new electrical engineering technique and its value to your industrial customers. Learn all you can about the technique and learn to interpret it as a service to your customers.

Infra red drying lamps have proved themselves in the metal finishing and other industries where controlled product heating from the inside out does the job better and quicker. Infra red ovens can be built quickly, installed by plant maintenance men, are portable, clean, efficient and economical. They will reduce paint drying time from hours to minutes, for thousands of products ranging from small parts to large vehicles—and they really build a load! The scope of their use is tremendous and represents a vast potential for new applications of electric power.

I think the smart utility will set itself up as technical advisers on industrial uses of electricity in all its forms. Probably the place to start is with a thorough-going knowledge of your potential, as I mentioned a few minutes ago, what plants can use what kind of UHF and electronic equipment, will it save them money or improve their product? Are you collecting technical data on these subjects? Have you talked to the manufacturers? Have you talked to the publishers of your trade papers There's probably plenty of work to be done before you could go out and do a selling job on this new equipment. The time to start is right now.

Just one more word—I know how utilities have been badgered in the past few years and I don't know that I blame you for playing the game cautiously and staying out of anything that might cause public antipathy. But I wonder if that very cautiousness isn't one of our greatest problems. The public never gets mad at salesmen and America being what it is it loves to see a company or industry doing an aggressive selling job. By selling they serve. Don't forget that cardinal axiom "Don't hide your light under a bushel." If you are selling and serving your community, for Heaven's sake tell them about it and keep telling them.

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Lighting Booklets		
Better Light—Better Sight—Better Production	$1.50 per 100	
Better Light—Better Sight—Better Living	$3.00 per 100	
Better Light—Better Sight—Better Sales	$1.50 per 100	
Priceless Eyes	4.50 per 100	
Lighting Films		
"Time to Relight"—(Commercial) sound slide 15 minutes, 85 pictures	$10.00 film & disc	
"Light Up—Step Up"—(Industrial) sound slide 15 minutes, 75 pictures	$10.00 " " "	
"You Can Do Something About It"—(Home) sound slide, 15 minutes, 95 pictures	$10.00 " " "	
Wiring		
Rewiring for Commercial and Industrial Buildings	$0.25	$0.25
Handbook of Interior Wiring Design—1937	.50	.50
Basic Factors of Adequate Wiring—1939	.25	.25
Covered Neutral Cable Helps Sell Adequate Home Wiring—1939	.25	.25
Commercial Building Re-wiring Market—1939	.35	.35
(Price on above three books as a group is 60c per set)		
Films		
Commercial Re-Wiring — lantern slides	Set $17.50	
Home Wiring—lantern slides	Set 25.00	

Miscellaneous, Reference Books, etc.

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Code for Electricity Meters (1941)	$1.60	$2.00
Good Radio Reception (1937)	100 copies	4.00
	1000 "	25.00
	3000 "	60.00
	5000 "	95.00
Objective Type Rates, 1933-1936	.80	2.00
Ice and Wind Loading Tables for Overhead Line Conductors (Revision of Tables 85 to 96 of the Overhead System Reference Book) 1942	1-4 copies	10c.
	5-49 "	6c.
Power Sales Manual, plus Sec. 12-13-14 of 1944 (1941)	4.75	7.00
Rate Book for 1943	10.00	25.00
Rewiring for Commercial and Industrial Buildings (1941)	.25	.25
Sales Training Manual—Commercial Electric Cooking (1941)	1.50	1.50
Storm Loading and Strength of Wood Pole Lines and a Study of Wind Gusts (1936)	2.00	5.00
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Jack McNeil

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